Map Intelligence Client

User Manual for Microsoft Reporting Services

pitney bowes

CONTENTS

INTRODUCTION

PURPOSE

This manual provides information about the Map Intelligence Client 3.2.3 for Reporting Services (*MIRS*). It explains the processes required for the developers to integrate Reporting Services to Map Intelligence Spatial Server.

AUDIENCE

The effective use of *Map Intelligence* involves a number of separate processes which can be performed by different user groups. The user groups involved are described below.

LAYER DESIGNERS

Layer designers are responsible for configuring the *Map Intelligence layers* that are displayed on the **Mapping Viewer**. Layer Designers are also responsible for configuring the settings for the Map Intelligence Server as well as the properties of the underlying map to be used for the analysis. This user group should have a firm understanding of the spatial analysis required.

Layer designers are advised to read all sections of this manual.

END USERS

End Users are users who want to view the configured layers on a map. Their roles include launching the *Mapping Viewer* to generate spatial representations of the data.

End Users are advised to read the separate *Mapping Viewer User Manual*

SERVER ADMINISTRATORS

Another type of user exists that is responsible for the installation and management of the *Map Intelligence Server*. These users should be familiar with the organization's mapping server (hereinafter referred to as GIS Provider). Server Administrators are advised to read the separate *Server Installation Guide and the Server and Administration Tools Guide*

CONVENTIONS

The following table shows the conventions that are used in this document.

Item	Meaning
➤	An arrow indicates the beginning of procedures consisting of sequential steps or one-step procedures.
< >	In examples, < > indicate that the enclosed elements are optional or they are instances of code to be replaced by the user with applicable information.
Bold	Bold in procedural steps highlights user interface elements on which the user must perform actions.
Italics	Emphasis, names of applications, files, windows and dialog boxes.
`Example text`	Courier font indicates that the example text is code or syntax.
`Courier italics`	Courier italic text indicates a variable field in command syntax. Substitute a value in place of the variable shown in Courier italics.
`n,x`	Italic *n stands for a variable number; italic x can stand for a variable number or a letter.*
Mouse Orientation	This document provides examples and procedures using a right-handed mouse. If you use a left-handed mouse, adjust the procedures accordingly.
Note	The Note icon indicates additional information relating to the topic.
Tip	The Tip icon suggests an alternative or shortcut procedure.

PREREQUISITES

Please refer to your *MI Client Readme* for the list of prerequisites.

In addition to the *MIRS* prerequisites, the *Map Intelligence Server* needs to be installed and configured in order to make the relevant maps, colors and images available for your analysis. The *Map Intelligence Server* requires that a suitable mapping server be installed. The installation of the *Map Intelligence Server* and mapping server are beyond the scope of this manual.

Tip For instructions on how to install and configure the Map Server refer to the Map Intelligence *Server Installation Guide and the Map Intelligence Server and Administration Tools Guide*

CONCEPTS

WHAT IS MAP INTELLIGENCE?

Map Intelligence extends the "no programming" paradigm into mapping and merges location and spatial analytics into enterprise decision support and Business Intelligence applications.

Map Intelligence enables bi-directional analysis between data visualized on maps and other more traditional representations such as tables of data, charts and reports. In this environment a user can easily discover previously hidden information and data relationships.

Map Intelligence reduces the time needed to develop the applications from weeks and months to days and hours. In many cases organizations have given up before solving the technical challenges that Map Intelligence solves.

Using web services from the vast range of online, statistical and business information, an organization's in-house data can be quickly, easily and dynamically augmented and enriched with geographical and satellite imagery. Available services include census, demographic and health data, climatic, hydrological and geological data.

Map Intelligence has two principal components:

THE MAP INTELLIGENCE CLIENT FOR REPORTING SERVICES (MIRS)

The *Map Intelligence Client for Reporting Services (MIRS)* includes a number of configuration screens that enable you to design your mapping application. Using the *MIRS* you select the underlying map you want to use, specify the 'look and feel' and build the different *Map Intelligence* layers to be used in your analysis. Once this has been done, your application is finished and in operation. The *MIRS* sends a request to the *Map Intelligence* Server to display your application in a web browser.

THE MAP INTELLIGENCE SERVER AND BROWSER MAPPING VIEWER

The *Map Intelligence Server* is the powerhouse behind the mapping application you designed using the *MRS*. It processes all the information sent from the *MIRS* to produce your application which you view and interact with in the browser *Mapping Viewer.* The *Map Intelligence Server* is supplied with a number of administration tools that include license administration, global default settings for the 'look and feel' and customization of various applications features such as *pop-ups*.

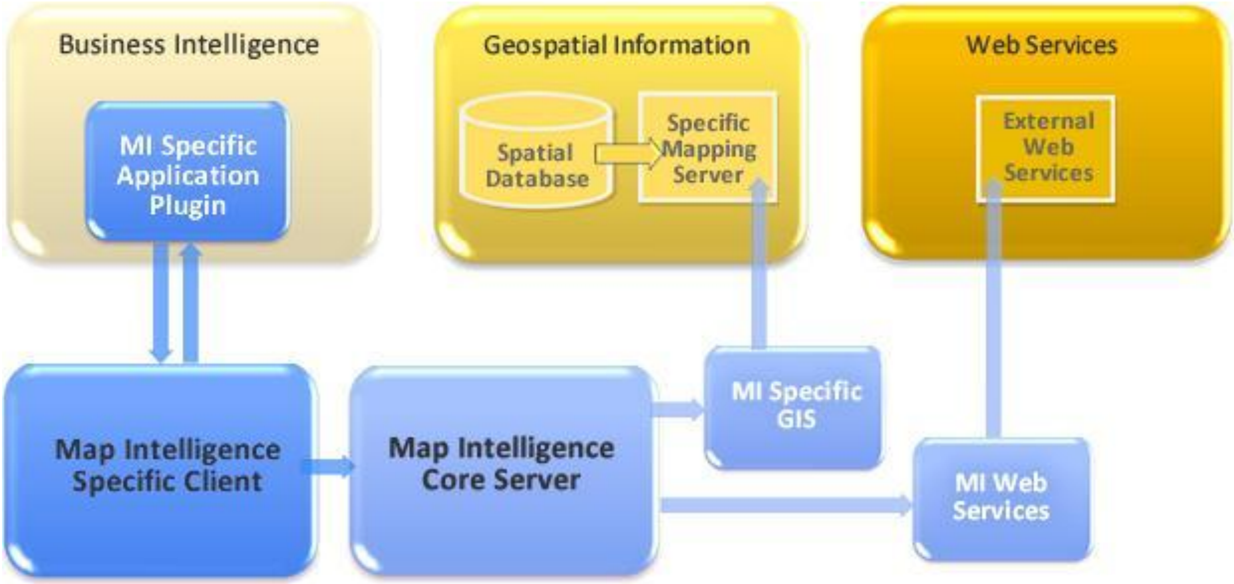


Figure 1. The Map Intelligence Platform.

WHAT IS A LAYER?

Maps are built with layers. Each layer holds characteristics that may be of interest to End Users. Layers contain features of the map such as streets, parks, postal districts, cities, radio towers, rivers and so on. Each map layer sits on top of another layer, e.g. a country layer may sit all the way at the bottom with street layers sitting right at the top.

Layers can also be created dynamically from data found in external sources. *Map Intelligence* is capable of generating a variety of layer types to aid analysis.

In this manual, layers that reside as part of the mapping environment are referred to as **built-in layers**. Layers created dynamically from external data sources including your report data are known as **Map Intelligence layers.**

LAYER TYPES

The following layers can be created and configured using Map Intelligence:

POINT LAYERS

Point Layers are map layers where data is represented on the map as discrete point images or symbols. For example: a particular layer might represent the location of stores as push-pin icons and another layer could represent accidents as colored dots, where the color (theme) represents the severity of the accident. Typically, the rows in a table of data belong to a business concept such as people or address details, where each column is an attribute of that concept. Thus each row in your business data can be represented as an individual point in a point layer. In Map Intelligence, point layers form the foundation for relationship layers.

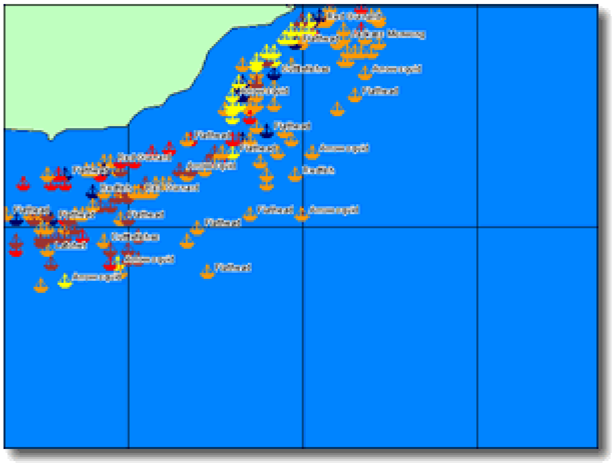


Figure 2. The Mapping Viewer displaying a Point layer. The points, represented by an image of a boat, indicate the position of the boat when it pulled up its net.

RELATIONSHIP LAYERS

Radius relationship layers are circular regions with themes around certain points of interest that show information about other points which fall within that circular region. These layers are generated by Map Intelligence. They are based on calculations made by Map Intelligence on the specified data values as defined by the Layer Designer. For example: different colored circles indicate the average house price within half a kilometer of a proposed waste plant. Another example is where different colored circles indicate the number of burglaries that have occurred within a five-mile distance of houses belonging to known burglars. In the current version of Map Intelligence, the circle center points (eg: houses belonging to known burglars) and the data being analyzed (burglaries), must be point layers.

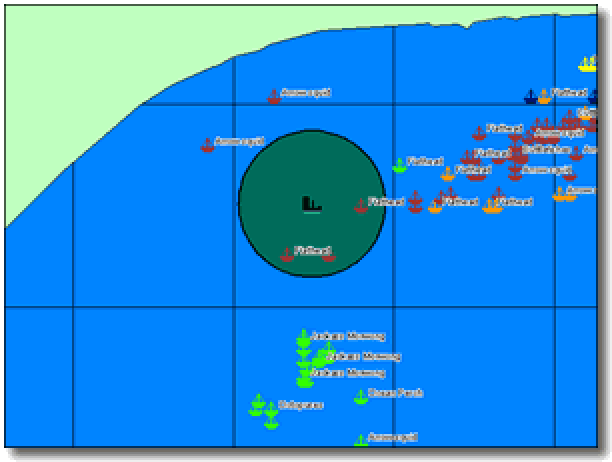


Figure 3. The Mapping Viewer displaying a Radius Relationship layer. The green circle on the map shows an exclusion zone where fishing is prohibited. We can see that 3 boats were fishing illegally.

A **Region Relationship** layer corresponds to a map area of any shape that is solely geographical in its definition, and is not generated by Map Intelligence. Examples would be suburbs, zip / postal codes, local government areas, or police precincts. Region Relationship layers can be given themes according to specified data rules associated with the points that fall within that region. An example of such a theme could be color-coding precincts according to the number of crimes that have taken place within their boundaries, or applying different hatches to suburbs based on the total value of house sales that have occurred in each one. Map Intelligence works out in which region a point (eg: a sale or an accident) physically belongs to by doing a spatial calculation.

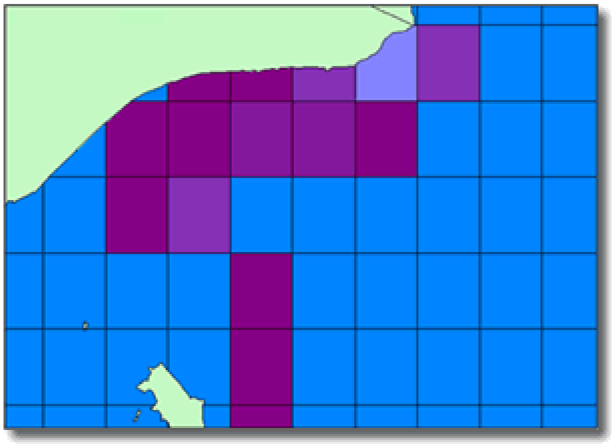


Figure 4. The Mapping Viewer displaying a Region Relationship layer. This half grid map of the ocean shows the amount of fish caught within each half grid square.

AREA GROUP LAYER

Area Group layers also correspond to existing areas on a map. As for **Region Relationship layers**, the displayed theme is based on data attribute values, but in this case no spatial calculation is required. Instead, a column in your business data is designated to have values that match a column in the map data. For example, an existing map layer of suburbs may correspond to a data column for suburbs where the values are the suburb names. Then, for transaction data that represents customer complaints and that also contains a suburb column, it is possible to make a cross-reference between the transaction and the map area using the suburb name. An example that would use this correlation is displaying a theme on a suburb's area on the map that reflects the most common complaint type received from that suburb.

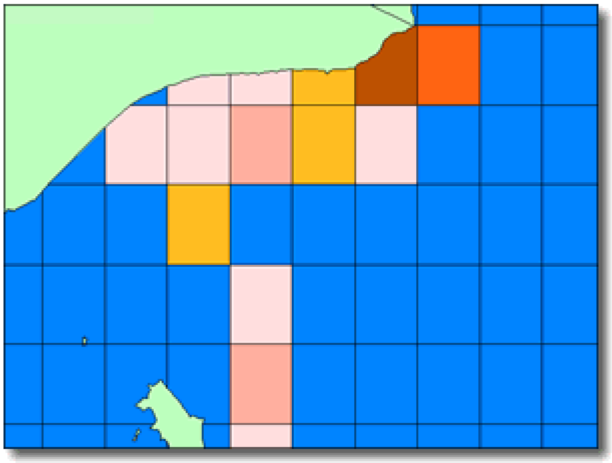


Figure 5. The Mapping Viewer displaying an Area Group layer. This half grid map of the ocean shows the amount of fish caught within each half grid square.

Like built-in map layers, Map Intelligence layers also have a specific order in which they are placed on the map. **Point layers** are placed on top of **Radius Relationship layers**, which in turn sit on top of the built-in map layers. **Region Relationship** and **Area Group layers** shade existing built-in layers.

WHAT IS A MAPPING VIEWER?

The *Mapping Viewer* displays the configured Map Intelligence layers overlaid on a specified map. The *Mapping Viewer* also provides a number of controls and features that allow you to navigate around the map or to change the theme displayed on the map. A number of tools are also available from the *Mapping Viewer* that allows you to perform high-level analysis.

LINKS TO MAP INTELIGENCE CLIENT FOR REPORTING SERVICES (MIRS)

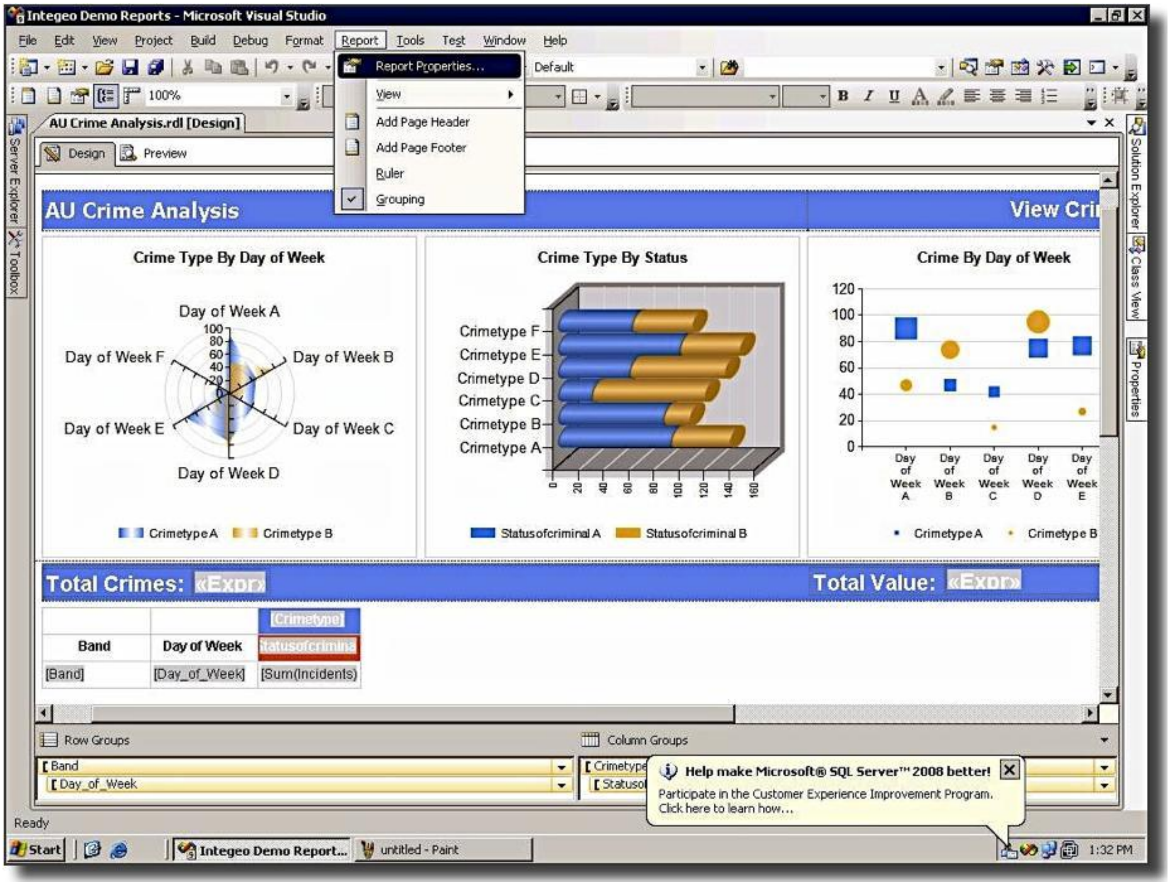
The following are the ways by which the link to the *MIRS* can be created:

1. creating a link through the *Report Manager*
2. embedding the map/report in an ASP .net page

The following sections are dedicated to the procedural discussions of these methods.

LINK THROUGH REPORT MANAGER

1. Create a Report project and set-up a connection to the data source.
2. Go to **Report→Report Properties**. The *Report Properties* window displays.



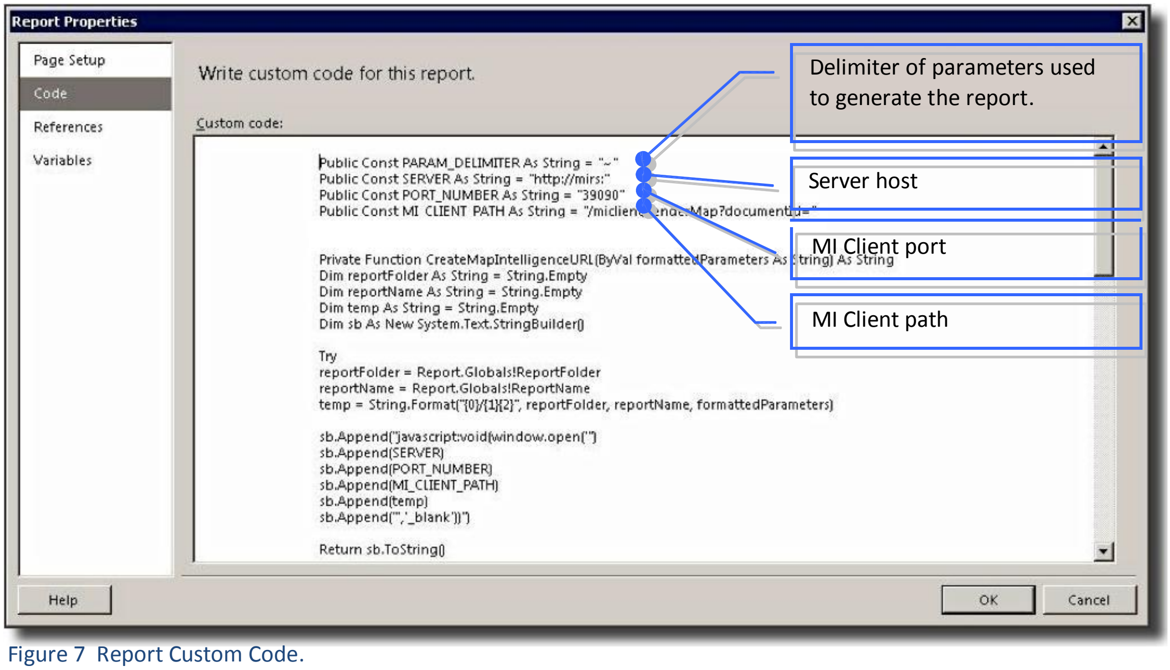
Help make Microsoft® SQL Server™ 2008 better!

Participate in the Customer Experience Improvement Program.
Click here to learn how...

Figure 6 Report Properties on Report Menu.

3. Click **Code.**

4. Write the custom code for the report. Note that *the first four (4) lines of code depend on the MI server configuration*. See sample code.

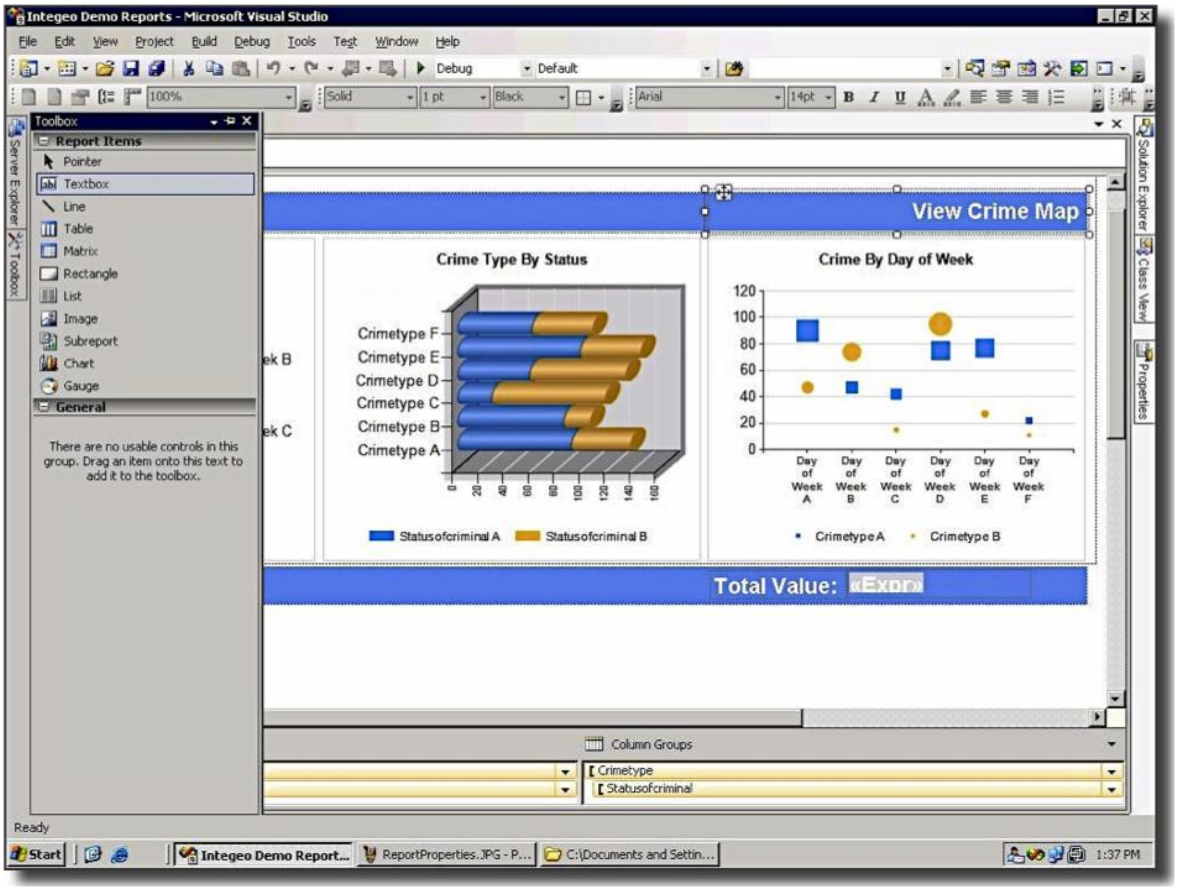


```
Public Const PARAM_DELIMITER As String = "~"
Public Const SERVER As String = "http://mirs:"
Public Const PORT_NUMBER As String = "39090"
Public Const MI_CLIENT_PATH As String = "/miclient/renderMap?documentId="


Private Function CreateMapIntelligenceURL(ByVal formattedParameters As String) As String
Dim reportFolder As String = String.Empty
Dim reportName As String = String.Empty
Dim temp As String = String.Empty
Dim sb As New System.Text.StringBuilder()

Try
reportFolder = Report.Globals!ReportFolder
reportName = Report.Globals!ReportName
temp = String.Format("{0}/{1}{2}", reportFolder, reportName, formattedParameters)

sb.Append("javascript:void(window.open('")
sb.Append(SERVER)
sb.Append(PORT_NUMBER)
sb.Append(MI_CLIENT_PATH)
sb.Append(temp)
sb.Append("','_blank'))")

Return sb.ToString()
```

Figure 7 Report Custom Code.

5. Click **OK**. The *Report Properties* window closes.

On the report layout, add a textbox that will serve as a link to the to the *Mapping Viewer*.



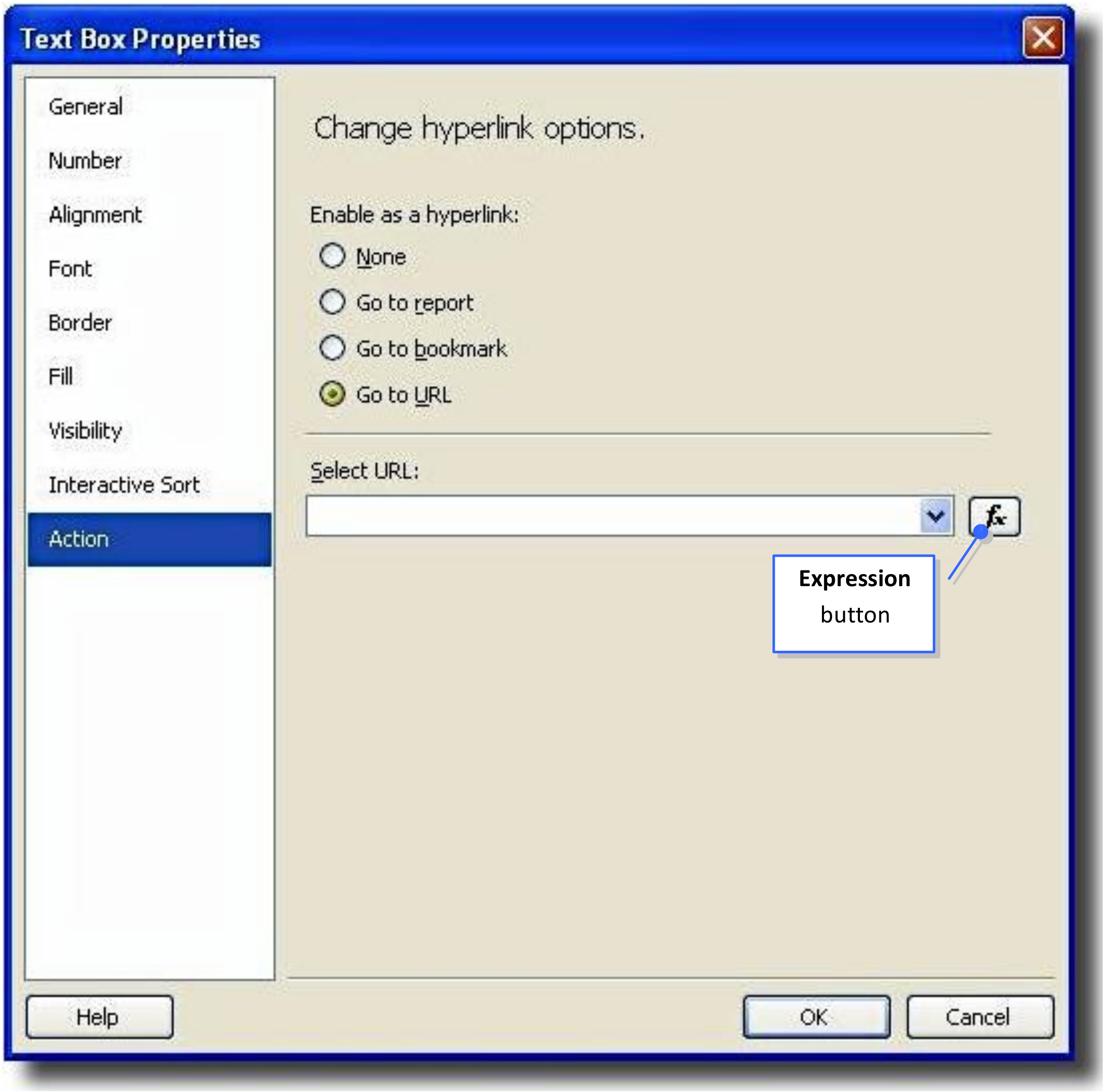
There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

Figure 8 Drag textbox to the Report Layout.

6. Right-click the textbox and select **Text Box Properties**.

7. On the *Text Box Properties* window, click **Action**.

8. Select hyperlink option: **Go to URL**



Change hyperlink options.

Enable as a hyperlink:

○ None

○ Go to report

○ Go to bookmark

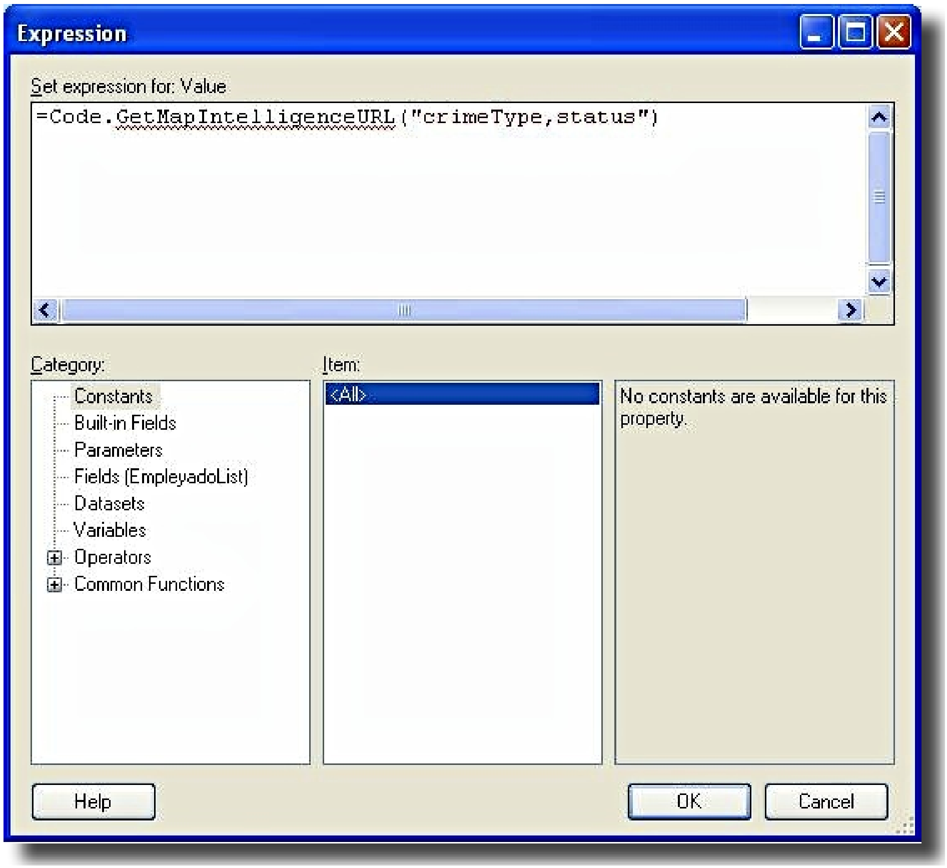
● Go to URL

Select URL:

Figure 9 Textbox Properties-Action Setting.

9. Click the **Expression** button adjacent to the **Select URL** field.

10. On the *Expression* dialog, call the GetMapIntelligenceURL function and indicate the parameters.



Set expression for: Value

```
=Code.GetMapIntelligenceURL("crimeType,status")
```

Figure 10 Calling Custom Code Function.

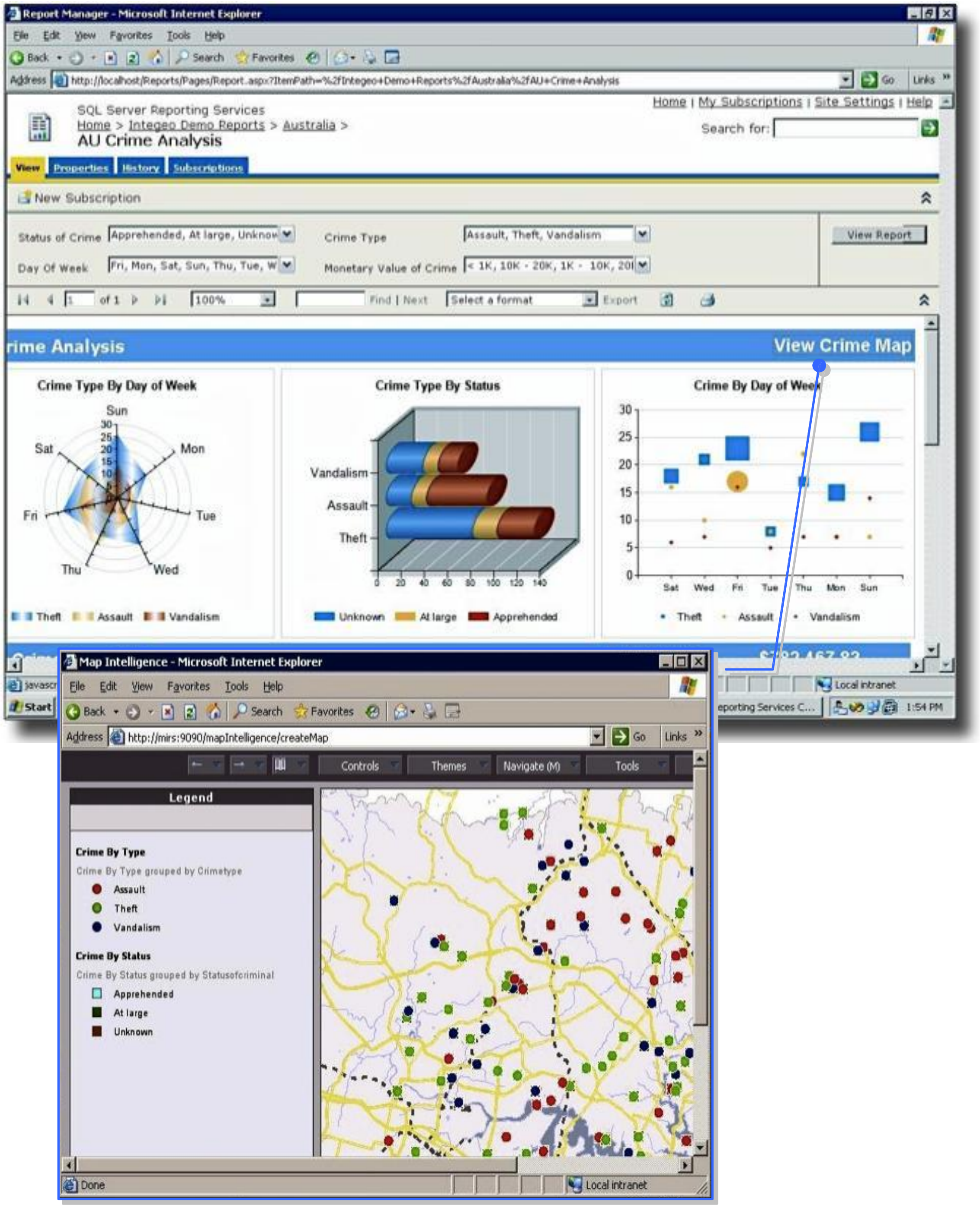
Note

The report parameters

- must be enclosed by (“ ”). If multiple parameters, separate by comma.
- are case-sensitive.

See the preceding figure.

11. Click **OK**. The window closes.



Address: http://localhost/Reports/Pages/Report.aspx?ItemPath=%2fIntegeo+Demo+Reports%2fAustralia%2fAU+Crime+Analysis

SQL Server Reporting Services
Home > Integeo Demo Reports > Australia >
AU Crime Analysis

Status of Crime: Apprehended, At large, Unknow
Crime Type: Assault, Theft, Vandalism
Day Of Week: Fri, Mon, Sat, Sun, Thu, Tue, W
Monetary Value of Crime: < 1K, 10K - 20K, 1K - 10K, 20l

Address: http://mirs:9090/mapIntelligence/createMap

Figure 11 Map Viewer Link.

EMBED MAP AND REPORT IN ASP .NET PAGE

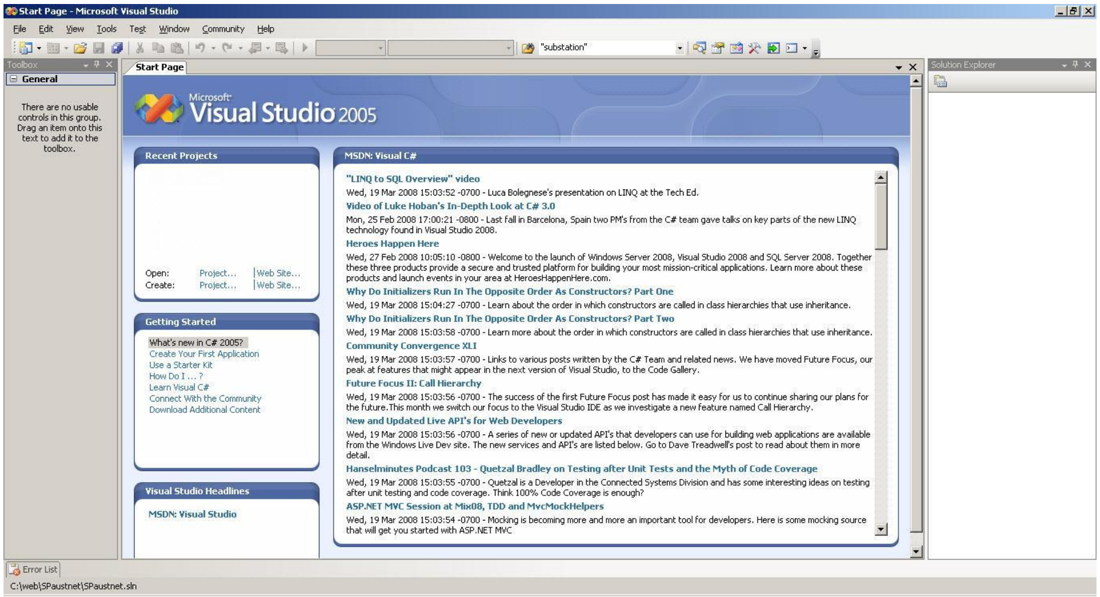
PREREQUISITES

The following software should be installed before creating an ASP.net page:

1. SQL Server 2005 or 2008
2. Microsoft SQLServer Reporting Services 2005 or 2008(Report Services is bundled with SQLServer 2005 or 2008 Installer)
3. Microsoft Visual Studio 2005 or 2008

EMBEDDING A MAP VIEWER IN ASP.NET

1. Go to Start>All Programs>Microsoft Visual Studio 2005 and click on Microsoft Visual Studio 2005 to open up the Visual Studio 2005 IDE. A screen similar to the following screen shot will be displayed:


Start Page - Microsoft Visual Studio
File Edit View Tools Test Window Community Help
"substation"
Toolbox
General
There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.
Start Page
Solution Explorer
Microsoft Visual Studio 2005
Recent Projects
Open: Project... | Web Site...
Create: Project... | Web Site...
Getting Started
What's new in C# 2005?
Create Your First Application
Use a Starter Kit
How Do I ... ?
Learn Visual C#
Connect With the Community
Download Additional Content
Visual Studio Headlines
MSDN: Visual Studio
MSDN: Visual C#
Error List
C:\web\SPaustnet\SPaustnet.sln

"LINQ to SQL Overview" video

Wed, 19 Mar 2008 15:03:52 -0700 - Luca Bolegnese's presentation on LINQ at the Tech Ed.

Video of Luke Hoban's In-Depth Look at C# 3.0

Mon, 25 Feb 2008 17:00:21 -0800 - Last fall in Barcelona, Spain two PM's from the C# team gave talks on key parts of the new LINQ technology found in Visual Studio 2008.

Heroes Happen Here

Wed, 27 Feb 2008 10:05:10 -0800 - Welcome to the launch of Windows Server 2008, Visual Studio 2008 and SQL Server 2008. Together these three products provide a secure and trusted platform for building your most mission-critical applications. Learn more about these products and launch events in your area at HeroesHappenHere.com.

Why Do Initializers Run In The Opposite Order As Constructors? Part One

Wed, 19 Mar 2008 15:04:27 -0700 - Learn about the order in which constructors are called in class hierarchies that use inheritance.

Why Do Initializers Run In The Opposite Order As Constructors? Part Two

Wed, 19 Mar 2008 15:03:58 -0700 - Learn more about the order in which constructors are called in class hierarchies that use inheritance.

Community Convergence XLI

Wed, 19 Mar 2008 15:03:57 -0700 - Links to various posts written by the C# Team and related news. We have moved Future Focus, our peak at features that might appear in the next version of Visual Studio, to the Code Gallery.

Future Focus II: Call Hierarchy

Wed, 19 Mar 2008 15:03:56 -0700 - The success of the first Future Focus post has made it easy for us to continue sharing our plans for the future.This month we switch our focus to the Visual Studio IDE as we investigate a new feature named Call Hierarchy.

New and Updated Live API's for Web Developers

Wed, 19 Mar 2008 15:03:56 -0700 - A series of new or updated API's that developers can use for building web applications are available from the Windows Live Dev site. The new services and API's are listed below. Go to Dave Treadwell's post to read about them in more detail.

Hanselminutes Podcast 103 - Quetzal Bradley on Testing after Unit Tests and the Myth of Code Coverage

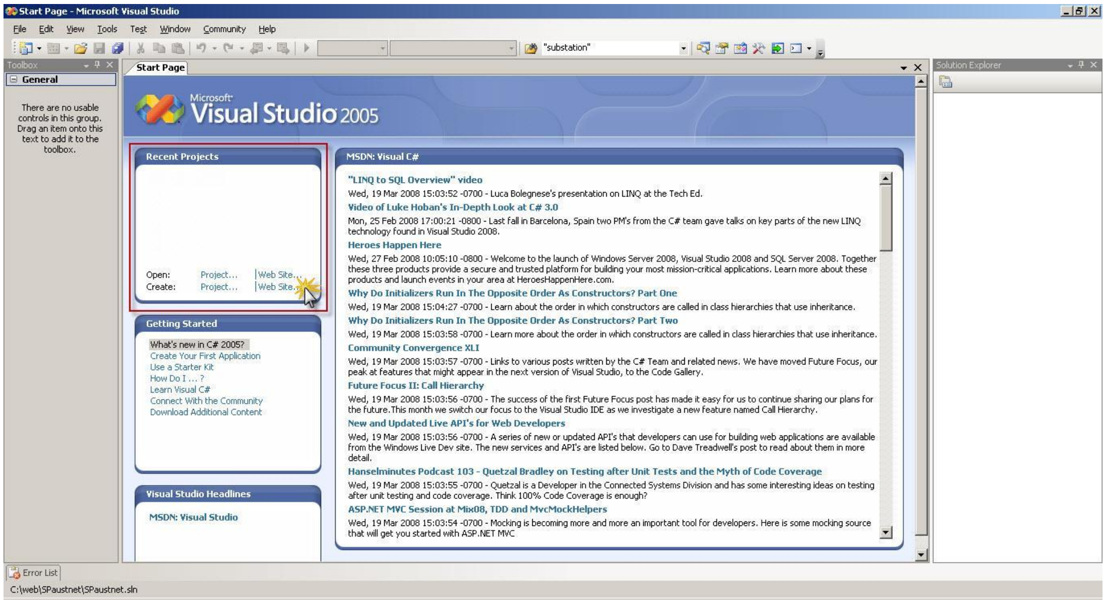
Wed, 19 Mar 2008 15:03:55 -0700 - Quetzal is a Developer in the Connected Systems Division and has some interesting ideas on testing after unit testing and code coverage. Think 100% Code Coverage is enough?

ASP.NET MVC Session at Mix08, TDD and MvcMockHelpers

Wed, 19 Mar 2008 15:03:54 -0700 - Mocking is becoming more and more an important tool for developers. Here is some mocking source that will get you started with ASP.NET MVC

Figure 12 Visual Studio 2005 IDE

2. There are two ways on how you can create a Website Project in Visual Studio. The first one is by clicking on the Website link under create inside the Recent Projects section as shown below:


Start Page - Microsoft Visual Studio
File Edit View Tools Test Window Community Help
"substation"
Toolbox
General
Start Page
Solution Explorer
Microsoft Visual Studio 2005
Recent Projects
Open: Project... Web Site...
Create: Project... Web Site...
Getting Started
What's new in C# 2005?
Create Your First Application
Use a Starter Kit
How Do I ... ?
Learn Visual C#
Connect With the Community
Download Additional Content
Visual Studio Headlines
MSDN: Visual Studio
MSDN: Visual C#
Error List

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

"LINQ to SQL Overview" video

Wed, 19 Mar 2008 15:03:52 -0700 - Luca Bolegnese's presentation on LINQ at the Tech Ed.

Video of Luke Hoban's In-Depth Look at C# 3.0

Mon, 25 Feb 2008 17:00:21 -0800 - Last fall in Barcelona, Spain two PM's from the C# team gave talks on key parts of the new LINQ technology found in Visual Studio 2008.

Heroes Happen Here

Wed, 27 Feb 2008 10:05:10 -0800 - Welcome to the launch of Windows Server 2008, Visual Studio 2008 and SQL Server 2008. Together these three products provide a secure and trusted platform for building your most mission-critical applications. Learn more about these products and launch events in your area at HeroesHappenHere.com.

Why Do Initializers Run In The Opposite Order As Constructors? Part One

Wed, 19 Mar 2008 15:04:27 -0700 - Learn about the order in which constructors are called in class hierarchies that use inheritance.

Why Do Initializers Run In The Opposite Order As Constructors? Part Two

Wed, 19 Mar 2008 15:03:58 -0700 - Learn more about the order in which constructors are called in class hierarchies that use inheritance.

Community Convergence XLI

Wed, 19 Mar 2008 15:03:57 -0700 - Links to various posts written by the C# Team and related news. We have moved Future Focus, our peak at features that might appear in the next version of Visual Studio, to the Code Gallery.

Future Focus II: Call Hierarchy

Wed, 19 Mar 2008 15:03:56 -0700 - The success of the first Future Focus post has made it easy for us to continue sharing our plans for the future.This month we switch our focus to the Visual Studio IDE as we investigate a new feature named Call Hierarchy.

New and Updated Live API's for Web Developers

Wed, 19 Mar 2008 15:03:56 -0700 - A series of new or updated API's that developers can use for building web applications are available from the Windows Live Dev site. The new services and API's are listed below. Go to Dave Treadwell's post to read about them in more detail.

Hanselminutes Podcast 103 - Quetzal Bradley on Testing after Unit Tests and the Myth of Code Coverage

Wed, 19 Mar 2008 15:03:55 -0700 - Quetzal is a Developer in the Connected Systems Division and has some interesting ideas on testing after unit testing and code coverage. Think 100% Code Coverage is enough?

ASP.NET MVC Session at Mix08, TDD and MvcMockHelpers

Wed, 19 Mar 2008 15:03:54 -0700 - Mocking is becoming more and more an important tool for developers. Here is some mocking source that will get you started with ASP.NET MVC

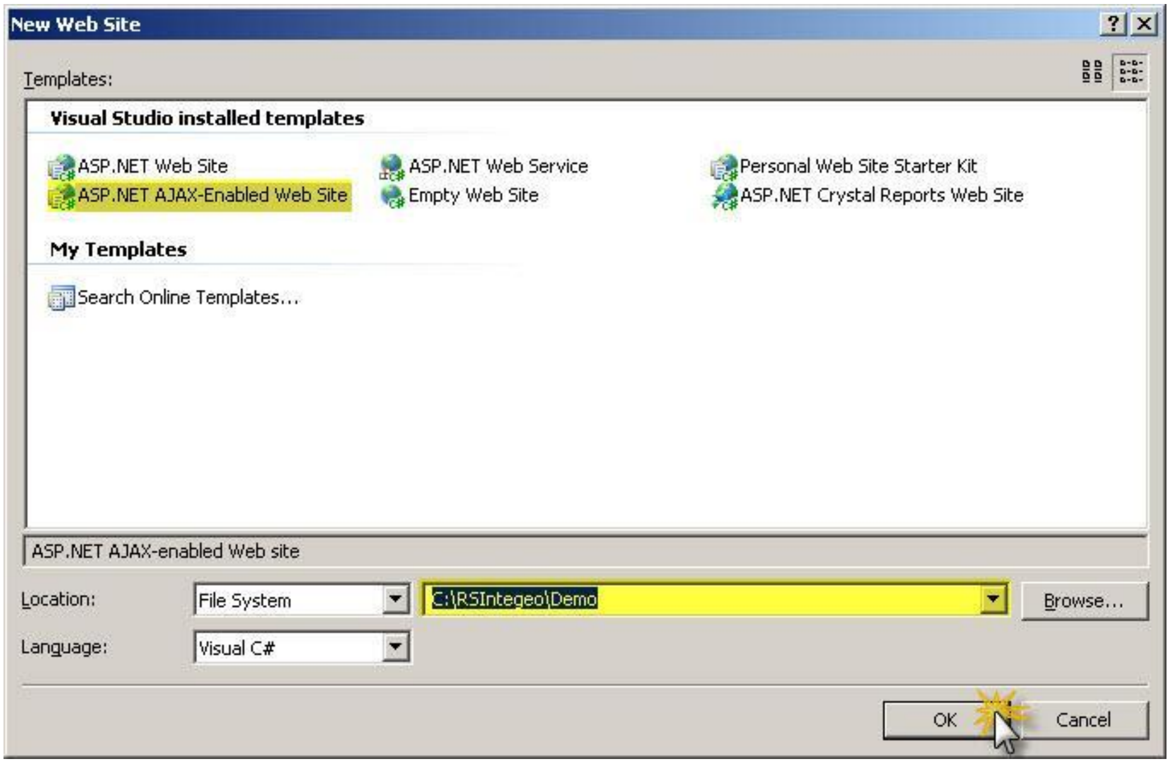
C:\web\SPaustnet\SPaustnet.sln

Figure 13 Recent Projects section.

The second approach steps are as follows:

- Go to File>New and click on Web Site...

3. On the New Website window, select the ASP.NET AJAX-Enabled Web Site template. On the Location drop down list, select File System and click on the Browse button where you wish to save the ASP.NET Website and click OK as shown below:



New Web Site
Templates:
Visual Studio installed templates
ASP.NET Web Site
ASP.NET AJAX-Enabled Web Site
ASP.NET Web Service
Empty Web Site
Personal Web Site Starter Kit
ASP.NET Crystal Reports Web Site
My Templates
Search Online Templates...
Browse...
OK
Cancel

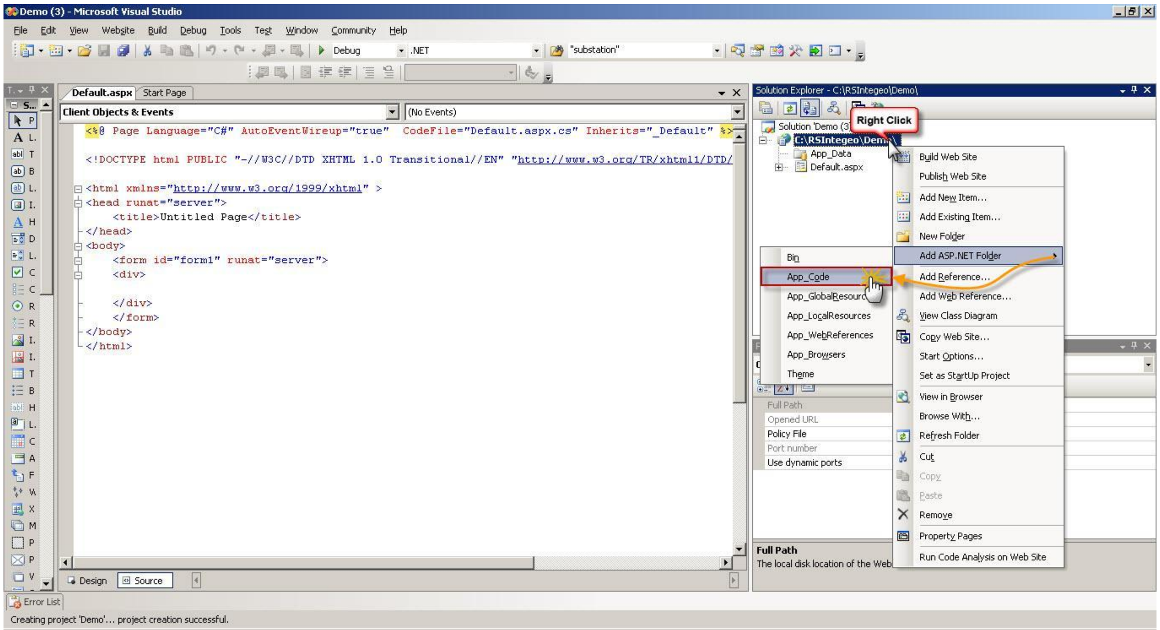
ASP.NET AJAX-enabled Web site

Location: File System C:\RSIntegeo\Demo

Language: Visual C#

Figure 14 New Website window.

4. On the Solution Explorer, right click on the Website, go to Add ASP.NET Folder and click on App_Code as shown on the following figure:



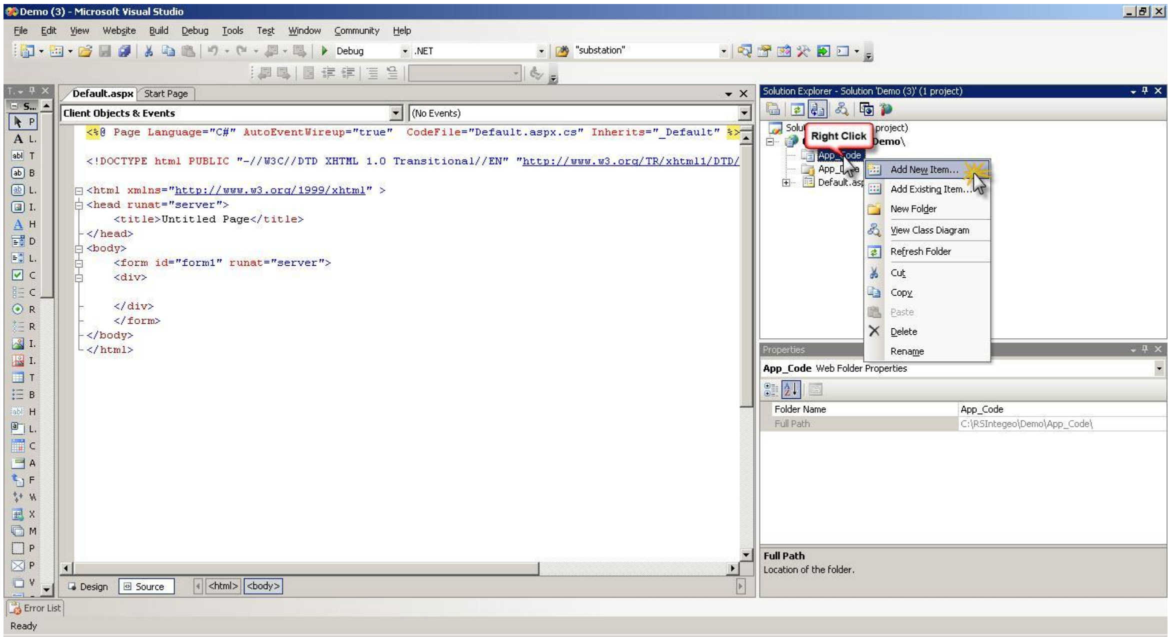
```
<%@ Page Language="C#" AutoEventWireup="true"  CodeFile="Default.aspx.cs" Inherits="_Default" %>

<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/

<html xmlns="http://www.w3.org/1999/xhtml" >
<head runat="server">
    <title>Untitled Page</title>
</head>
<body>
    <form id="form1" runat="server">
    <div>

    </div>
    </form>
</body>
</html>
```

Creating project 'Demo'... project creation successful.

Figure 15 Solution Explorer window

Once you have added the App_Code folder, you will notice that a new folder named App_Code is added on the Solution Explorer.

5. The next step is to add a class that will implement the **IReportServerCredentials** interface. The **IReportServerCredential** interface allows an application to provide credentials for connecting to a Reporting Services report server. Right click on the App_Code folder and click on Add New Item as shown in the following figure:



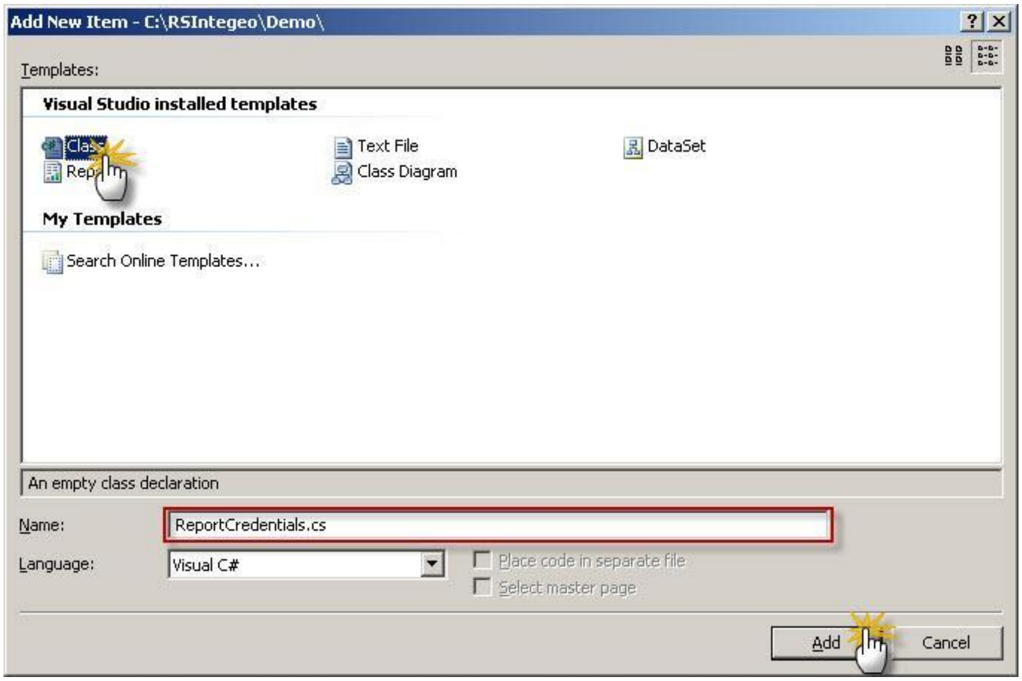
```
<%@ Page Language="C#" AutoEventWireup="true"  CodeFile="Default.aspx.cs" Inherits="_Default" %>

<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/

<html xmlns="http://www.w3.org/1999/xhtml" >
<head runat="server">
    <title>Untitled Page</title>
</head>
<body>
    <form id="form1" runat="server">
    <div>

    </div>
    </form>
</body>
</html>
```

Folder Name App_Code
Full Path C:\RSIntegeo\Demo\App_Code\

Full Path
Location of the folder.

Figure 16 Adding a new class.

6. On the Add New Item window, select Class then on the Name text box, enter ReportCredential.cs then click the Add button as show on the following figure:


Add New Item - C:\RSIntegeo\Demo\
Templates:
Visual Studio installed templates
Class
Report
Text File
Class Diagram
DataSet
My Templates
Search Online Templates...
An empty class declaration
□ Place code in separate file
□ Select master page
Add
Cancel

Name: ReportCredentials.cs

Language: Visual C#

Figure 127 Add new item Window

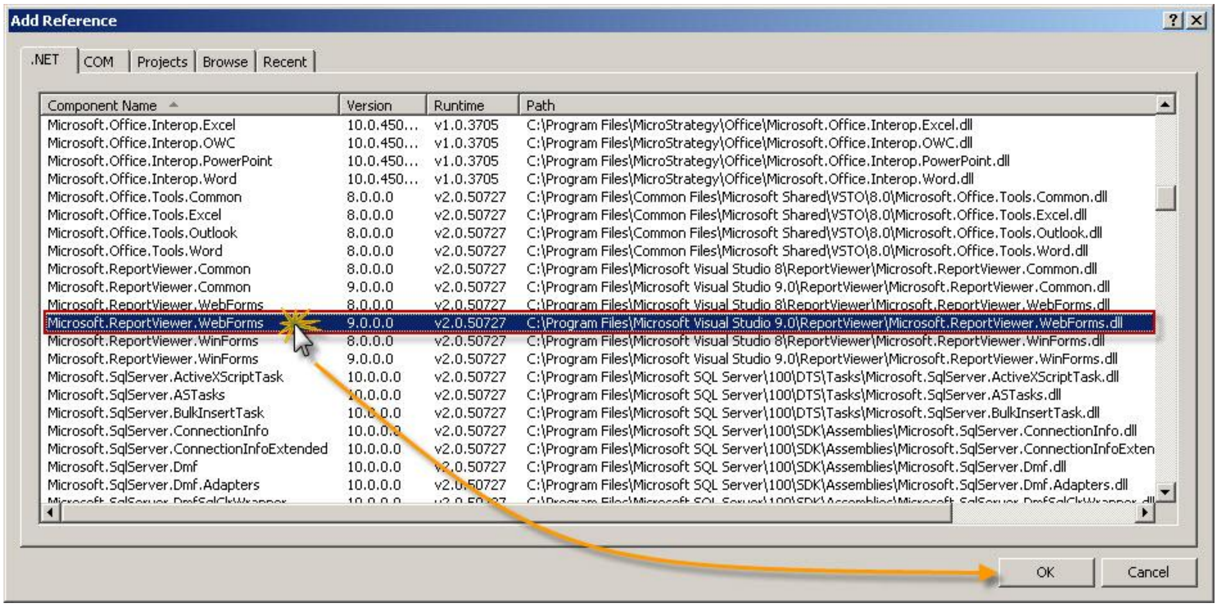
7. Once the ReportCredentials.cs has been added to the application, the following lines of codes must be added to the class:

```
using System;
using System.Data;
using System.Configuration;
using System.Web;
using System.Web.Security;
using System.Web.UI;
using System.Web.UI.WebControls;
using System.Web.UI.WebControls.WebParts;
using System.Web.UI.HtmlControls;

/// <summary>
/// Allows applications to provide credentials for connecting to a
/// Reporting Services report server.
/// </summary>
[Serializable]
public sealed class ReportCredentials : Microsoft.Reporting.WebForms.IReportServerCredentials
{
    string _userName, _password, _domain;

    /// <summary>
    /// ReportCredentials Constructor
    /// </summary>
    /// <param name="userName"></param>
    /// <param name="password"></param>
    /// <param name="domain"></param>
    public ReportCredentials(string userName, string password, string domain)
    {
        _userName = userName;
        _password = password;
        _domain = domain;
    }

    public System.Security.Principal.WindowsIdentity ImpersonationUser
    {
        get
        {
            // Use the default Windows user.  Credentials will be
            // provided by the NetworkCredentials property.
            return null;
        }
    }

    /// <summary>
    // Read the user information from the Web.config file.
    // By reading the information on demand instead of
    // storing it, the credentials will not be stored in
    // session, reducing the vulnerable surface area to the
    // Web.config file, which can be secured with an ACL.
    /// </summary>
    public System.Net.ICredentials NetworkCredentials
    {
        get
        {

            return new System.Net.NetworkCredential(_userName, _password, _domain);
        }

    }

    public bool GetFormsCredentials(out System.Net.Cookie authCoki, out string userName, out string password, out string authority)
    {
        userName = _userName;
        password = _password;
        authority = _domain;
        authCoki = new System.Net.Cookie(".ASPXAUTH", ".ASPXAUTH", "/", "Domain");
        return true;
    }
}
```

Figure 138 Code For Implementing Report Server Credentials

8. The next step is to add another class that will handle the report and map rendering. On the Solution Explorer, right click on the App_Code folder and click on Add New Item... . On the Add New Item window select Class, and on the Name text box enter ReportingObject.cs then click Add .

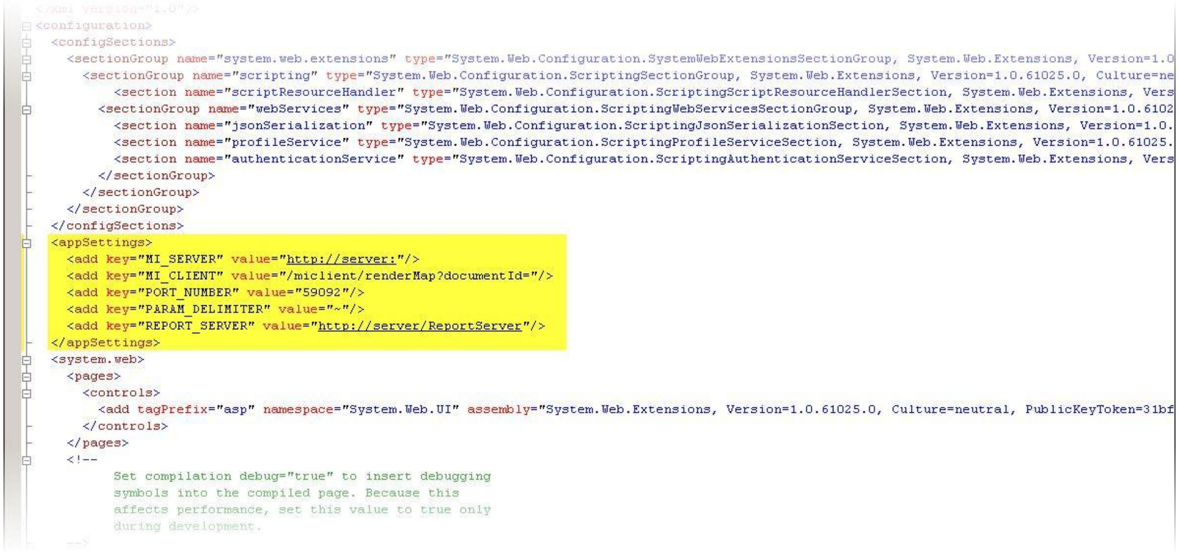
9. On the Solution Explorer, right click on the Website and click on Add Reference... . On the Add Reference window scroll down on the list and select Microsoft.ReportViewer.WebForms and click OK as shown on the following figure:



Component Name	Version	Runtime	Path
Microsoft.Office.Interop.Excel	10.0.450...	v1.0.3705	C:\Program Files\MicroStrategy\Office\Microsoft.Office.Interop.Excel.dll
Microsoft.Office.Interop.OWC	10.0.450...	v1.0.3705	C:\Program Files\MicroStrategy\Office\Microsoft.Office.Interop.OWC.dll
Microsoft.Office.Interop.PowerPoint	10.0.450...	v1.0.3705	C:\Program Files\MicroStrategy\Office\Microsoft.Office.Interop.PowerPoint.dll
Microsoft.Office.Interop.Word	10.0.450...	v1.0.3705	C:\Program Files\MicroStrategy\Office\Microsoft.Office.Interop.Word.dll
Microsoft.Office.Tools.Common	8.0.0.0	v2.0.50727	C:\Program Files\Common Files\Microsoft Shared\VSTO\8.0\Microsoft.Office.Tools.Common.dll
Microsoft.Office.Tools.Excel	8.0.0.0	v2.0.50727	C:\Program Files\Common Files\Microsoft Shared\VSTO\8.0\Microsoft.Office.Tools.Excel.dll
Microsoft.Office.Tools.Outlook	8.0.0.0	v2.0.50727	C:\Program Files\Common Files\Microsoft Shared\VSTO\8.0\Microsoft.Office.Tools.Outlook.dll
Microsoft.Office.Tools.Word	8.0.0.0	v2.0.50727	C:\Program Files\Common Files\Microsoft Shared\VSTO\8.0\Microsoft.Office.Tools.Word.dll
Microsoft.ReportViewer.Common	8.0.0.0	v2.0.50727	C:\Program Files\Microsoft Visual Studio 8\ReportViewer\Microsoft.ReportViewer.Common.dll
Microsoft.ReportViewer.Common	9.0.0.0	v2.0.50727	C:\Program Files\Microsoft Visual Studio 9.0\ReportViewer\Microsoft.ReportViewer.Common.dll
Microsoft.ReportViewer.WebForms	8.0.0.0	v2.0.50727	C:\Program Files\Microsoft Visual Studio 8\ReportViewer\Microsoft.ReportViewer.WebForms.dll
Microsoft.ReportViewer.WebForms	9.0.0.0	v2.0.50727	C:\Program Files\Microsoft Visual Studio 9.0\ReportViewer\Microsoft.ReportViewer.WebForms.dll
Microsoft.ReportViewer.WinForms	8.0.0.0	v2.0.50727	C:\Program Files\Microsoft Visual Studio 8\ReportViewer\Microsoft.ReportViewer.WinForms.dll
Microsoft.ReportViewer.WinForms	9.0.0.0	v2.0.50727	C:\Program Files\Microsoft Visual Studio 9.0\ReportViewer\Microsoft.ReportViewer.WinForms.dll
Microsoft.SqlServer.ActiveXScriptTask	10.0.0.0	v2.0.50727	C:\Program Files\Microsoft SQL Server\100\DTS\Tasks\Microsoft.SqlServer.ActiveXScriptTask.dll
Microsoft.SqlServer.ASTasks	10.0.0.0	v2.0.50727	C:\Program Files\Microsoft SQL Server\100\DTS\Tasks\Microsoft.SqlServer.ASTasks.dll
Microsoft.SqlServer.BulkInsertTask	10.0.0.0	v2.0.50727	C:\Program Files\Microsoft SQL Server\100\DTS\Tasks\Microsoft.SqlServer.BulkInsertTask.dll
Microsoft.SqlServer.ConnectionInfo	10.0.0.0	v2.0.50727	C:\Program Files\Microsoft SQL Server\100\SDK\Assemblies\Microsoft.SqlServer.ConnectionInfo.dll
Microsoft.SqlServer.ConnectionInfoExtended	10.0.0.0	v2.0.50727	C:\Program Files\Microsoft SQL Server\100\SDK\Assemblies\Microsoft.SqlServer.ConnectionInfoExten
Microsoft.SqlServer.Dmf	10.0.0.0	v2.0.50727	C:\Program Files\Microsoft SQL Server\100\SDK\Assemblies\Microsoft.SqlServer.Dmf.dll
Microsoft.SqlServer.Dmf.Adapters	10.0.0.0	v2.0.50727	C:\Program Files\Microsoft SQL Server\100\SDK\Assemblies\Microsoft.SqlServer.Dmf.Adapters.dll
Microsoft.SqlServer.DmfSqlClrWrapper	10.0.0.0	v2.0.50727	C:\Program Files\Microsoft SQL Server\100\SDK\Assemblies\Microsoft.SqlServer.DmfSqlClrWrapper.dll

Figure 149 Add Reference Window

10. In the Solution Explorer, double click on Web.Config. On the Web.Config, Add a section for the appSettings as shown in the figure below:



```
<?xml version="1.0"?>
<configuration>
  <configSections>
    <sectionGroup name="system.web.extensions" type="System.Web.Configuration.SystemWebExtensionsSectionGroup, System.Web.Extensions, Version=1.0
      <sectionGroup name="scripting" type="System.Web.Configuration.ScriptingSectionGroup, System.Web.Extensions, Version=1.0.61025.0, Culture=ne
          <section name="scriptResourceHandler" type="System.Web.Configuration.ScriptingScriptResourceHandlerSection, System.Web.Extensions, Vers
        <sectionGroup name="webServices" type="System.Web.Configuration.ScriptingWebServicesSectionGroup, System.Web.Extensions, Version=1.0.6102
          <section name="jsonSerialization" type="System.Web.Configuration.ScriptingJsonSerializationSection, System.Web.Extensions, Version=1.0.
          <section name="profileService" type="System.Web.Configuration.ScriptingProfileServiceSection, System.Web.Extensions, Version=1.0.61025.
          <section name="authenticationService" type="System.Web.Configuration.ScriptingAuthenticationServiceSection, System.Web.Extensions, Vers
        </sectionGroup>
      </sectionGroup>
    </sectionGroup>
  </configSections>
  <appSettings>
    <add key="MI_SERVER" value="http://server:"/>
    <add key="MI_CLIENT" value="/miclient/renderMap?documentId="/>
    <add key="PORT_NUMBER" value="59092"/>
    <add key="PARAM_DELIMITER" value="~"/>
    <add key="REPORT_SERVER" value="http://server/ReportServer"/>
  </appSettings>
  <system.web>
    <pages>
      <controls>
        <add tagPrefix="asp" namespace="System.Web.UI" assembly="System.Web.Extensions, Version=1.0.61025.0, Culture=neutral, PublicKeyToken=31bf
      </controls>
    </pages>
    <!--
          Set compilation debug="true" to insert debugging
          symbols into the compiled page. Because this
          affects performance, set this value to true only
          during development.
    -->
```

Figure 20 Adding MI Configuration Settings

11. Copy the following configuration settings and paste it after the </configSections> element.

```
<appSettings>
```

```
        <add key="MI_SERVER" value="http://server:"/>
        <add key="MI_CLIENT" value="/miclient/renderMap?documentId="/>
        <add key="PORT_NUMBER" value="59092"/>
        <add key="PARAM_DELIMITER" value="~"/>
        <add key="REPORT_SERVER" value="http://server/ReportServer"/>
</appSettings>
```

Figure 215 MI Configuration Settings

Below are the sections of the <appSettings>

KEY	DESCRIPTION	SAMPLE VALUE
MI_SERVER	The Server name where the MI Client is hosted.	“http://server:/
MI_CLIENT	This is the name of the miclient.	“/miclient/renderMap?documentId=”
PORT_NUMBER	The Port number used by the MI Client	“59092”
PARAM_DELIMITER	The parameter delimiter used by the MI Client	“~”
REPORT_SERVER	The URL of the Report Server	“http://server/ReportServer”

Figure 22 Configuration Setting Definition

On the solution explorer, double click on the ReportingObject.cs and copy and paste the following code:

```
using System;
using System.Data;
using System.Configuration;
using System.Collections;
using System.Collections.Generic;
using System.IO;
using System.Net;
using System.Text;
using System.Web;
using System.Web.Security;
using System.Web.UI;
using System.Web.UI.WebControls;
using System.Web.UI.WebControls.WebParts;
using System.Web.UI.HtmlControls;
using Microsoft.Reporting.WebForms;
/// <summary>
/// Summary description for ReportingObject
/// </summary>
public class ReportingObject
{
    public ReportingObject()
    {

    }

    /// <summary>
    /// This Method is used for rendering a report.
    /// </summary>
    /// <param name="reportViewer"></param>
    /// <param name="param"></param>
    public static void RenderReport(ReportViewer reportViewer, ReportParameter[] param)
    {
        string url = ConfigurationManager.AppSettings["REPORT_SERVER"];
        Uri reportServerURL = new Uri(url);
        try
        {
            reportViewer.ShowCredentialPrompts = true;
            reportViewer.ServerReport.ReportServerCredentials = new
ReportCredentials("administrator", "Password2011", "server");
            reportViewer.ProcessingMode = ProcessingMode.Remote;
            reportViewer.ServerReport.ReportServerUrl = reportServerURL;
            reportViewer.ServerReport.SetParameters(param);
            reportViewer.ServerReport.Refresh();
        }
        catch (ReportViewerException ex)
        {
            throw ex;
        }
    }


    /// <summary>
    /// This method is used for creating the url string of the configured map.
    /// </summary>
    /// <param name="reportViewer"></param>
    /// <param name="userID"></param>
    /// <returns>String</returns>
    public static string GetMapURL(ReportViewer reportViewer, string userID)
    {
        string MI_SERVER = ConfigurationManager.AppSettings["MI_SERVER"];
        string MI_CLIENT = ConfigurationManager.AppSettings["MI_CLIENT"];
        string PORT_NUMBER = ConfigurationManager.AppSettings["PORT_NUMBER"];
        string PARAM_DELIMITER = ConfigurationManager.AppSettings["PARAM_DELIMITER"];

        string reportName = string.Empty;
        string reportPath = string.Empty;
        string temp = string.Empty;
        string url = string.Empty;
        string connToken = string.Empty;

        StringBuilder sb = new StringBuilder();
        ReportParameterInfoCollection parameterCollection =
reportViewer.ServerReport.GetParameters();

        reportPath = reportViewer.ServerReport.ReportPath;
        reportName = reportViewer.ServerReport.DisplayName;

        //connToken = string.Format("&connToken={0}{1}", reportID, userID.Replace("\\", ""));
        connToken = string.Format("&connToken={0}{1}", reportName, userID.Replace("\\", ""));

        sb.Append(MI_SERVER);
        sb.Append(PORT_NUMBER)
        ;
        sb.Append(MI_CLIENT);
        sb.Append(reportPath);

        foreach (ReportParameterInfo info in parameterCollection)
        {
            foreach (string value in info.Values)
            {
                if (info.Values.Count > 1)
                {
                    temp += string.Format("{0}{1}", value, PARAM_DELIMITER);
                }
                else
                {
                    temp = value;
                }
            }
            sb.Append(string.Format("&{0}={1}", info.Name, temp));
            temp = string.Empty;

        }
        url = sb.ToString();
        url += connToken;

        return url;

    }
    /// <summary>
    /// This method is used for refreshing the Reporting Services report based on the
selection made on the map.
    /// </summary>
    /// <param name="reportViewer"></param>
    /// <returns></returns>
    public static string GetMapFilter(ReportViewer reportViewerID, string userID)
    {
        ReportParameterInfoCollection parameters =
reportViewerID.ServerReport.GetParameters();
        ReportParameter[] parm = new ReportParameter[parameters.Count];
        Hashtable tblFilter = new Hashtable();
        string filterCol = string.Empty;
        string values = string.Empty;

        string[] layerList = GetLayerList(reportViewerID, userID);

        //Display all points on the map if there is no selection done on the map.
        if (layerList.Length == 1 && layerList[0] == string.Empty)
        {
            int paramCount = 0;

            foreach (ReportParameterInfo paramInfo in parameters)
            {
                List<string> defaults = new List<string>();

                foreach (ValidValue value in paramInfo.ValidValues)
                {
                    defaults.Add(value.Value);
                }
                parm[paramCount] = new ReportParameter(paramInfo.Name, defaults.ToArray());
                paramCount += 1;
            }

            RenderReport(reportViewerID, parm);

            return GetMapURL(reportViewerID, userID);
        }

        foreach (string layerName in layerList)
        {
            string[] selections = GetSelectedItems(layerName, reportViewerID, userID);

            for (int i = 0; i < selections.Length; i++)
            {
                if (i == 0)
                {
                    filterCol = selections[i];
                }
                else
                {
                    if (!values.Contains(selections[i]))
                    {
                        values += selections[i] + ",";
                    }
                }
            }

            int startPos = values.LastIndexOf(',');
            values = values.Remove(startPos, 1);

            tblFilter.Add(filterCol, values);

            filterCol = string.Empty;
            values = string.Empty;
        }

        int parameterCount = 0;

        foreach (ReportParameterInfo paramInfo in parameters)
        {
            if (tblFilter.Contains(paramInfo.Name))
            {
                List<string> filterList = new List<string>();
                string filters = tblFilter[paramInfo.Name].ToString();
                string[] filterArray = filters.Split(',');

                foreach (string filter in filterArray)
                {
                    if (filter != string.Empty)
                    {
                        filterList.Add(filter);
                    }
                }
                parm[parameterCount] = new ReportParameter(paramInfo.Name,
filterList.ToArray());

            }
            else
            {
                List<string> defaultValues = new List<string>();

                foreach (string value in paramInfo.Values)
                {
                    defaultValues.Add(value);
                }
                parm[parameterCount] = new ReportParameter(paramInfo.Name,
defaultValues.ToArray());
            }
            parameterCount += 1;
        }

        RenderReport(reportViewerID, parm);

        return GetMapURL(reportViewerID, userID);

    }

    /// <summary>
    /// This is used to get all the Selection Layers.
    /// </summary>
    /// <param name="reportViewerID"></param>
    /// <param name="userID"></param>
    /// <returns></returns>
    private static string[] GetLayerList(ReportViewer reportViewerID, string userID)
    {
        StringBuilder sb = new StringBuilder();
        Uri requestURI;

        string MI_SERVER = ConfigurationManager.AppSettings["MI_SERVER"];
        string PORT_NUMBER = ConfigurationManager.AppSettings["PORT_NUMBER"];
        string PARAM_DELIMITER = ConfigurationManager.AppSettings["PARAM_DELIMITER"];

        string documentName = string.Empty;
        string connToken = string.Empty;
        string layerList = string.Empty;

        documentName = reportViewerID.ServerReport.ReportPath.Replace(" ", "%20");
        connToken = userID.Replace("\\", "");

        sb.Append(MI_SERVER); sb.Append(PORT_NUMBER);
        sb.Append("/miclient/selectFilterMap?document-
        name="); sb.Append(documentName);
        sb.Append("&connToken=");
        sb.Append(connToken);
        sb.Append("&command=list");
        sb.Append("&columnDelimiter=");
        sb.Append(PARAM_DELIMITER);
        sb.Append("&rowDelimiter=");
        sb.Append(PARAM_DELIMITER);

        requestURI = new Uri(sb.ToString());

        System.Net.HttpWebRequest rq =
(System.Net.HttpWebRequest)HttpWebRequest.Create(requestURI);
        System.Net.HttpWebResponse resp = (System.Net.HttpWebResponse)rq.GetResponse();
        StreamReader sr = new StreamReader(resp.GetResponseStream());

        layerList = sr.ReadToEnd();

        sr.Close();

        string[] listArray = layerList.Split('~');

        return listArray;
    }

    /// <summary>
    /// This is used to get all the selected items from a selected layer.
    /// </summary>
    /// <param name="layerName"></param>
    /// <param name="reportViewerID"></param>
    /// <param name="userID"></param>
    /// <returns></returns>
    private static string[] GetSelectedItems(string layerName, ReportViewer reportViewerID,
string userID)
    {
        StringBuilder sb = new StringBuilder();
        Uri requestURI;

        string MI_SERVER = ConfigurationManager.AppSettings["MI_SERVER"];
        string PORT_NUMBER = ConfigurationManager.AppSettings["PORT_NUMBER"];
        string PARAM_DELIMITER = ConfigurationManager.AppSettings["PARAM_DELIMITER"];

        string documentName = string.Empty;
        string connToken = string.Empty;
        string selectedItems = string.Empty;
        string[] layerValues;

        documentName = reportViewerID.ServerReport.ReportPath.Replace(" ", "%20");
        connToken = userID.Replace("\\", "");

        sb.Append(MI_SERVER); sb.Append(PORT_NUMBER);
        sb.Append("/miclient/selectFilterMap?document-
        name="); sb.Append(documentName);
        sb.Append("&connToken=");
        sb.Append(connToken);
        sb.Append("&command=get");
        sb.Append("&columnDelimiter=");
        sb.Append(PARAM_DELIMITER);
        sb.Append("&rowDelimiter=");
        sb.Append(PARAM_DELIMITER);
        sb.Append("&layerName=");
        sb.Append(layerName.Replace(" ", "%20"));

        requestURI = new Uri(sb.ToString());

        System.Net.HttpWebRequest rq =
(System.Net.HttpWebRequest)HttpWebRequest.Create(requestURI);
        System.Net.HttpWebResponse resp = (System.Net.HttpWebResponse)rq.GetResponse();

        StreamReader sr = new StreamReader(resp.GetResponseStream());

        selectedItems = sr.ReadToEnd();
        sr.Close();

        layerValues = selectedItems.Split('~');

        return layerValues;
    }

}
```

12. The next step is to design the web page that will display the map. On the Solution Explorer, right click on the website and select Add New Item… See example below

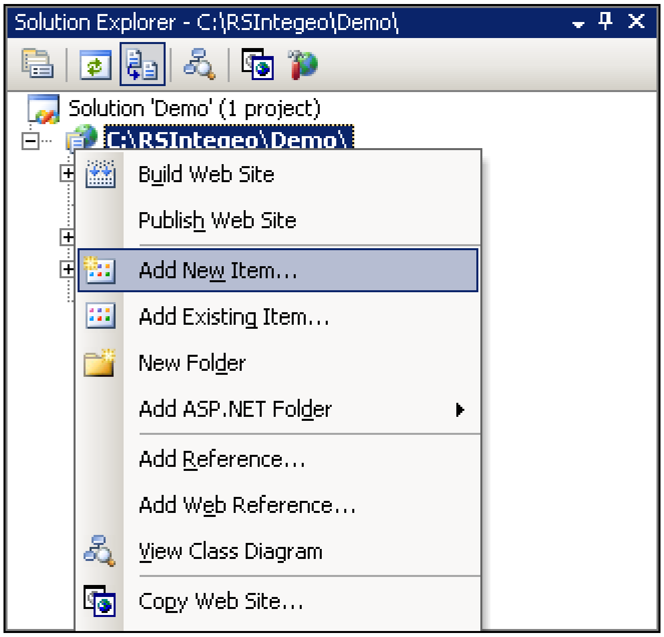
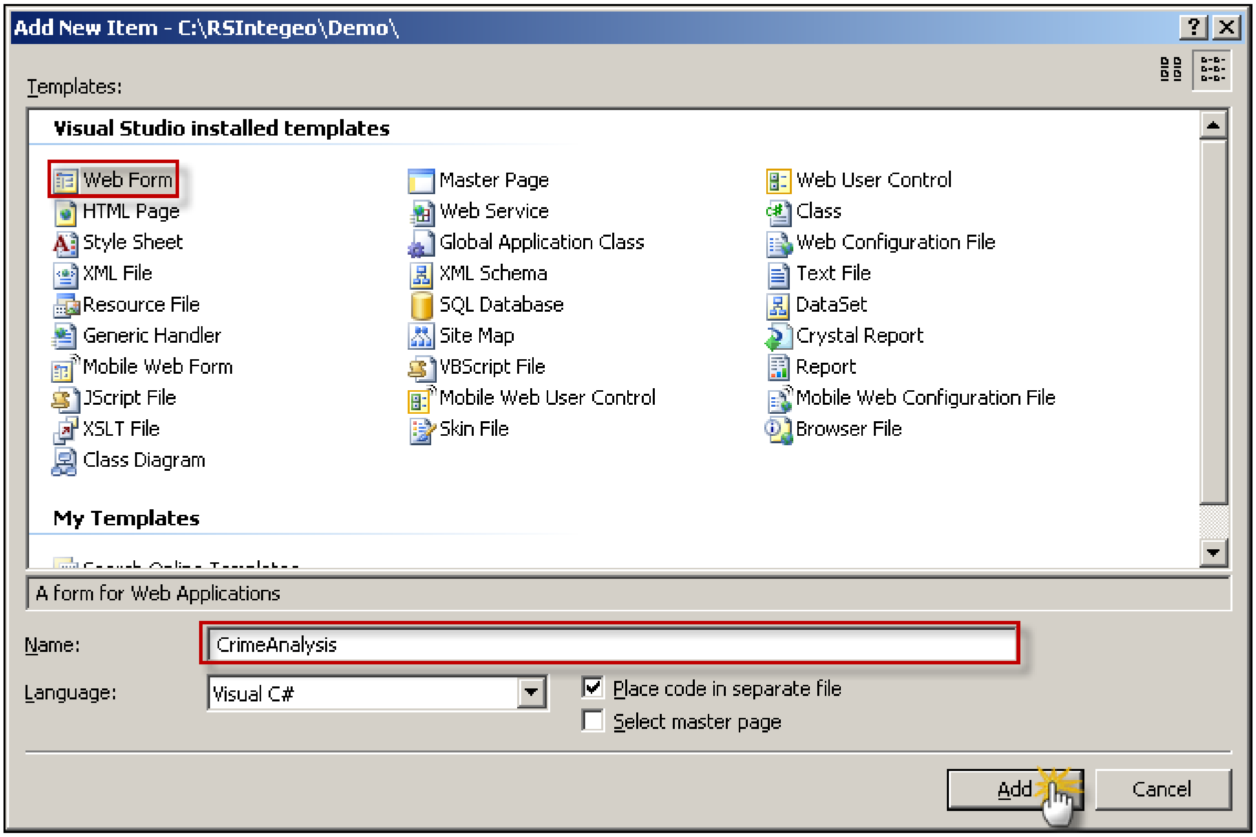


Figure 23 Adding New Item

13. On the Add New Item window, click on Web Form and on the Name field enter CrimeAnalysis and click Add as shown on the following figure:



Name: CrimeAnalysis

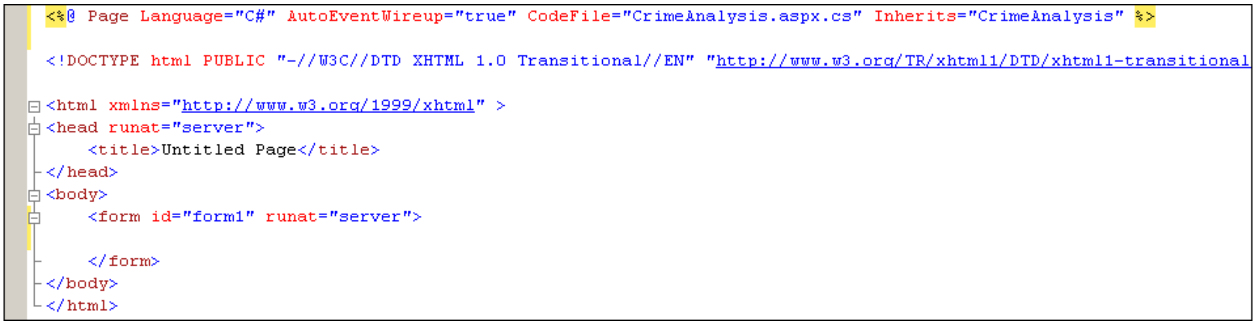
Language: Visual C#

☑ Place code in separate file

□ Select master page

Figure 24 New Item Window

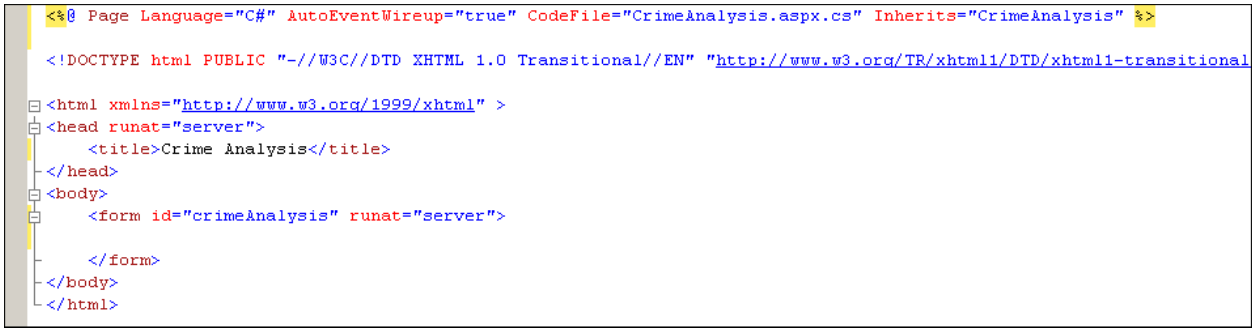
14. On the Solution Explorer, double click on the CrimeAnalysis.aspx and it should give you the following design source view:



```
<%@ Page Language="C#" AutoEventWireup="true" CodeFile="CrimeAnalysis.aspx.cs" Inherits="CrimeAnalysis" %>

<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional

<html xmlns="http://www.w3.org/1999/xhtml" >
<head runat="server">
    <title>Untitled Page</title>
</head>
<body>
    <form id="form1" runat="server">

    </form>
</body>
</html>
```

Figure 25 Source Design View

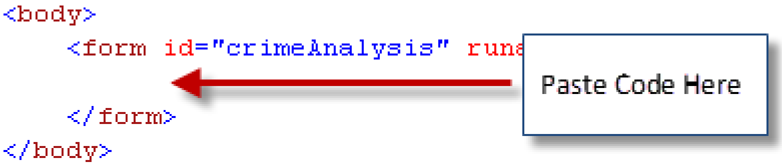
15. On the <title> tag, replace Untitled Page to Crime Analysis and replace the form id with crimeAnalysis as show below:



```
<%@ Page Language="C#" AutoEventWireup="true" CodeFile="CrimeAnalysis.aspx.cs" Inherits="CrimeAnalysis" %>

<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional

<html xmlns="http://www.w3.org/1999/xhtml" >
<head runat="server">
    <title>Crime Analysis</title>
</head>
<body>
    <form id="crimeAnalysis" runat="server">

    </form>
</body>
</html>
```

Figure 26 Replacing the Form Id

16. Copy the following lines and paste it inside the form tag as shown below:



```
<body>
    <form id="crimeAnalysis" runa

    </form>
</body>
```

Figure 27 Form Tag

```
<div id="main_content">
            <table style="width: 100%">
                <tr>
                    <td>
                        <asp:Label ID="lblHeader" runat="server" BackColor="RoyalBlue" Font-
Bold="True" Font-Names="Calibri"
                            Font-Size="24pt" ForeColor="White" Text="Integeo Demo: Crime
Analysis" Width="100%"></asp:Label></td>
                </tr>
            </table>
            <table style="width: 100%; height: 100%">
                <tr>
                    <td style="width: 20%; height: 100%" valign="top">
                        <table width="100%">
                            <tr>
                                <td width="20%">
                                    <asp:GridView ID="grdCrimeStatus" runat="server"
AutoGenerateColumns="False" Width="70%"
                                        Font-Names="Calibri">
                                        <Columns>
                                            <asp:TemplateField>
                                                <HeaderTemplate>
                                                    <asp:CheckBox ID="chkAll" runat="server"
/>
                                                </HeaderTemplate>
                                                <ItemTemplate>
                                                    <asp:CheckBox ID="chkItem" runat="server"
/>
                                                </ItemTemplate>
                                                <HeaderStyle Width="5%" />
                                            </asp:TemplateField>
                                            <asp:TemplateField>
                                                <HeaderTemplate>
```

```
                                                    <asp:Label ID="Label2" runat="server" 
Text="CRIME STATUS"></asp:Label>
                                                </HeaderTemplate>
                                                <ItemTemplate>
                                                    <asp:Label ID="lblCrimeStatus" 
runat="server" Text='<%# Eval("Statusofcriminal") %>'></asp:Label>
                                                </ItemTemplate>
                                                <HeaderStyle Width="65%" />
                                            </asp:TemplateField>
                                        </Columns>
                                        <RowStyle Font-Size="Smaller" />
                                        <HeaderStyle BackColor="DarkOrange" Font-Size="Small" 
ForeColor="White" />
                                        <AlternatingRowStyle BackColor="#E0E0E0" 
BorderColor="Black" BorderStyle="Solid"
                                            BorderWidth="1px" />
                                    </asp:GridView>
                                </td>
                            </tr>
                            <tr>
                                <td width="20%">
                                    <asp:GridView ID="grdDayOfWeek" runat="server" 
AutoGenerateColumns="False" Width="70%"
                                        Font-Names="Calibri">
                                        <Columns>
                                            <asp:TemplateField>
                                                <HeaderTemplate>
                                                    <asp:CheckBox ID="chkAll" runat="server" 
/>
                                                </HeaderTemplate>
                                                <ItemTemplate>
                                                    <asp:CheckBox ID="chkItem" runat="server" 
/>
                                                </ItemTemplate>
                                                <HeaderStyle Width="5%" />
                                            </asp:TemplateField>
                                            <asp:TemplateField>
                                                <HeaderTemplate>
                                                    &nbsp;<asp:Label ID="Label1" 
runat="server" Text="DAY OF WEEK"></asp:Label>
                                                </HeaderTemplate>
                                                <ItemTemplate>
                                                    <asp:Label ID="lblDayOfWeek" 
runat="server" Text='<%# Eval("Day_Of_Week") %>'></asp:Label>
                                                </ItemTemplate>
                                                <HeaderStyle Width="65%" />
                                            </asp:TemplateField>
                                        </Columns>
                                        <RowStyle Font-Size="Smaller" />
                                        <HeaderStyle BackColor="DarkOrange" Font-Size="Small" 
ForeColor="White" />
                                        <AlternatingRowStyle BackColor="#E0E0E0" 
BorderColor="Black" BorderStyle="Solid"
                                            BorderWidth="1px" />
                                    </asp:GridView>
                                </td>
                            </tr>
                            <tr>
                                <td width="20%">
                                    <asp:GridView ID="grdCrimeType" runat="server" 
AutoGenerateColumns="False" Width="70%"
                                        Font-Names="Calibri">
                                        <Columns>
                                            <asp:TemplateField>
                                                <HeaderTemplate>
                                                    <asp:CheckBox ID="chkAll" runat="server" 
/>
                                                </HeaderTemplate>
                                                <ItemTemplate>
                                                    <asp:CheckBox ID="chkItem" runat="server" 
/>
                                                </ItemTemplate>
                                                <HeaderStyle Width="5%" />
                                            </asp:TemplateField>
                                            <asp:TemplateField>
                                                <HeaderTemplate>
                                                    <asp:Label ID="Label3" runat="server"
Text="CRIME TYPE"></asp:Label>
                                                </HeaderTemplate>
                                                <ItemTemplate>
                                                    <asp:Label ID="lblCrimeType"
runat="server" Text='<%# Eval("Crimetype") %>'></asp:Label>
                                                </ItemTemplate>
                                                <HeaderStyle Width="65%" />
                                            </asp:TemplateField>
                                        </Columns>
                                        <RowStyle Font-Size="Smaller" />
                                        <HeaderStyle BackColor="DarkOrange" Font-Size="Small"
ForeColor="White" />
                                        <AlternatingRowStyle BackColor="#E0E0E0"
BorderColor="Black" BorderStyle="Solid"
                                            BorderWidth="1px" />
                                    </asp:GridView>
                                </td>
                            </tr>
                            <tr>
                                <td width="20%">
                                    <asp:GridView ID="grdValueOfCrime" runat="server"
AutoGenerateColumns="False" Width="70%"
                                        Font-Names="Calibri">
                                        <Columns>
                                            <asp:TemplateField>
                                                <HeaderTemplate>
                                                    <asp:CheckBox ID="chkAll" runat="server"
/>
                                                </HeaderTemplate>
                                                <ItemTemplate>
                                                    <asp:CheckBox ID="chkItem" runat="server"
/>
                                                </ItemTemplate>
                                                <HeaderStyle Width="5%" />
                                            </asp:TemplateField>
                                            <asp:TemplateField>
                                                <HeaderTemplate>
                                                    <asp:Label ID="Label4" runat="server"
Text="VALUE OF CRIME"></asp:Label>
                                                </HeaderTemplate>
                                                <ItemTemplate>
                                                    <asp:Label ID="lblValueOfCrime"
runat="server" Text='<%# Eval("Band") %>'></asp:Label>
                                                </ItemTemplate>
                                                <HeaderStyle Width="65%" />
                                            </asp:TemplateField>
                                        </Columns>
                                        <RowStyle Font-Size="Smaller" />
                                        <HeaderStyle BackColor="DarkOrange" Font-Size="Small"
ForeColor="White" />
                                        <AlternatingRowStyle BackColor="#E0E0E0"
BorderColor="Black" BorderStyle="Solid"
                                            BorderWidth="1px" />
                                    </asp:GridView>
                                </td>
                            </tr>
                            <tr>
                                <td width="20%">
                                    <asp:Button ID="btnViewReport" runat="server"
OnClick="btnViewReport_Click" Text="View Report"
                                        Font-Names="Calibri" /><asp:Button
ID="btnGetMapFilter" runat="server" Text="Get Map Filter"
                                            Font-Names="Calibri" /></td>
                            </tr>
                        </table>
                    </td>
                    <td style="width: 80%; height: 100%" valign="top">
                    </td>
                </tr>
                <tr>
                    <td style="width: 20%; height: 100%" valign="top">
                    </td>
                    <td style="width: 80%; height: 100%" valign="top" align="center">
                        <div id="MapView">
                            <iframe id="MapFrame" runat="server" frameborder="0"
scrolling="no" src="about:blank"
                                style="width: 100%; height: 640px" visible="true" align="left"
valign="top"></iframe>
                        </div>
                    </td>
                </tr>
            </table>
        </div>
```

17. Switch to Design view by click the following button Design as shown in the next

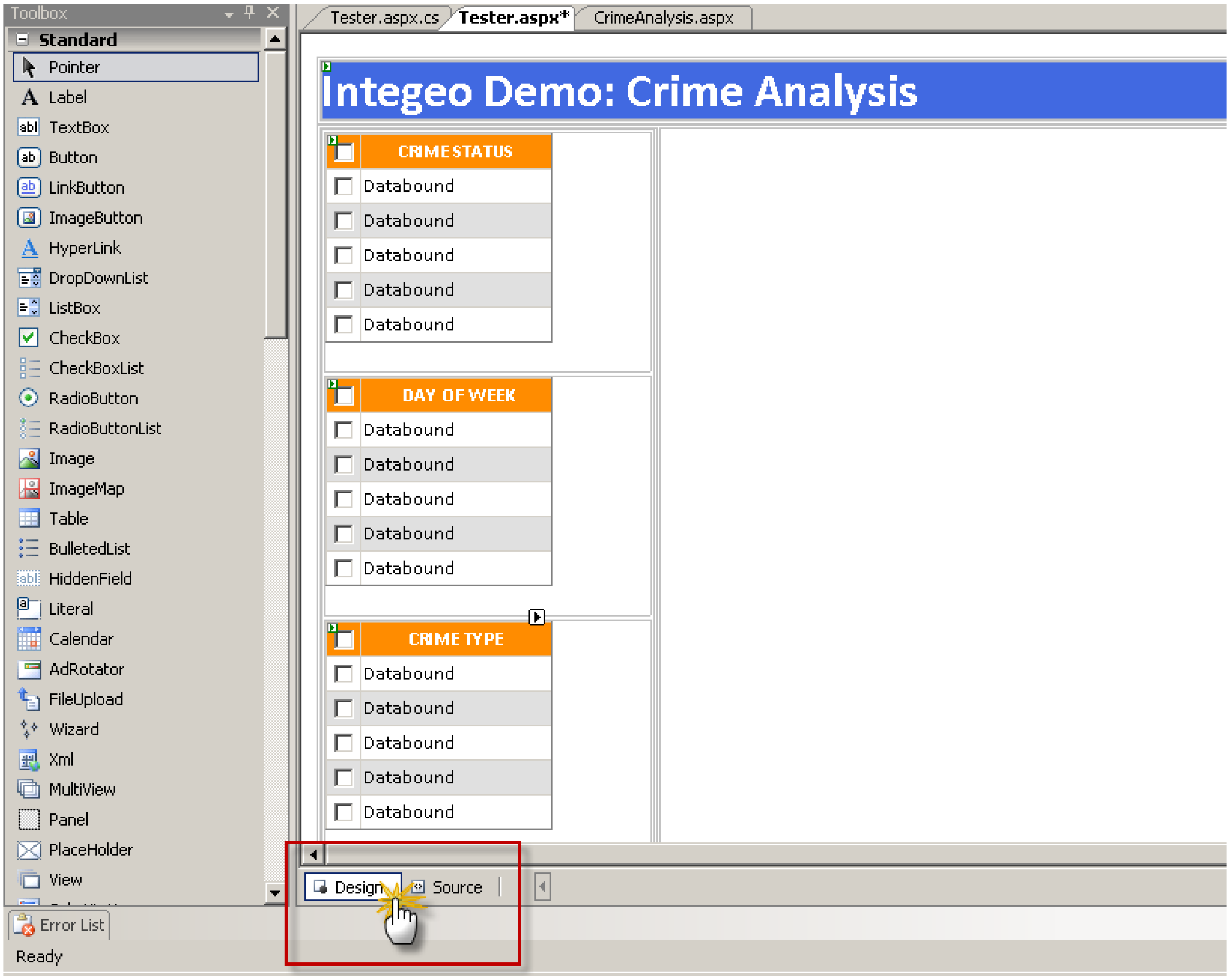


Figure 28 Design View

18. On the Toolbox, expand Data then drag and drop a ReportViewer Control as shown in the next figure:

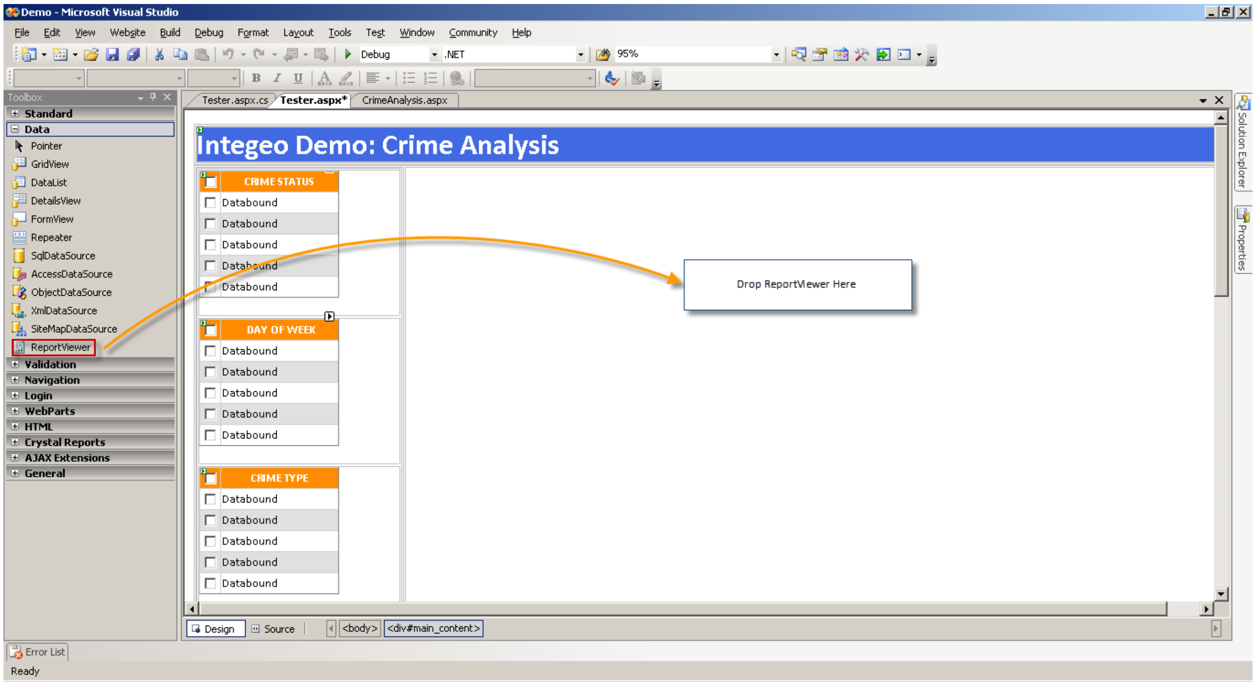


Figure 29 Adding a ReportViewer Control

19. On the Properties window, change the ID of the ReportViewer to **rptVw**.

20. On the Solution Explorer, select CrimeAnalysis.aspx then switch to Code View By click the View Code button as shown below:

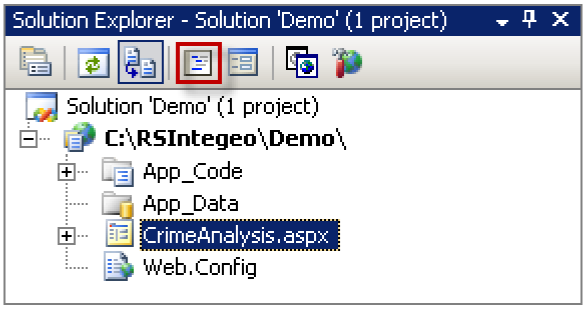

Solution Explorer - Solution 'Demo' (1 project)
Solution 'Demo' (1 project)
C:\RSIntegeo\Demo\
App_Code
App_Data
CrimeAnalysis.aspx
Web.Config

Figure 30 Solution Explorer

21. Replace all codes from the code view with the following codes.

```
using System;
using System.Data;
using System.Data.SqlClient;
using System.Configuration;
using System.Collections;
using System.Collections.Generic;
using System.Web;
using System.Web.Security;
using System.Web.UI;
using System.Web.UI.WebControls;
using System.Web.UI.WebControls.WebParts;
using System.Web.UI.HtmlControls;
using Microsoft.Reporting.WebForms;

public partial class CrimeAnalysis : System.Web.UI.Page
{
    protected void Page_Load(object sender, EventArgs e)
    {
        if (!IsPostBack)
        {
            DisplayCrimeStatus();
            DisplayCrimeType();
            DisplayDayOfWeek();
            DisplayCrimeValue();
        }
    }

    /// <summary>
    /// This method is in charge for displaying the Crime Status.
    /// </summary>
    private void DisplayCrimeStatus()
    {
        string query = "SELECT DISTINCT Statusofcriminal FROM SG_CRIME";
        grdCrimeStatus.DataSource = GetList(query);
        grdCrimeStatus.DataBind();
    }

    /// <summary>
    /// This method is in charge for displaying the Crime Types.
    /// </summary>
    private void DisplayCrimeType()
    {
        string query = "SELECT DISTINCT Crimetype FROM SG_CRIME";
        grdCrimeType.DataSource = GetList(query);
        grdCrimeType.DataBind();
    }

    /// <summary>
    /// This method is in charge for displaying the Value of Crime.
    /// </summary>
    private void DisplayCrimeValue()
    {
        string query = "SELECT DISTINCT Band FROM SG_CRIME";
        grdValueOfCrime.DataSource = GetList(query);
        grdValueOfCrime.DataBind();
    }

    /// <summary>
    /// This method is in charge of displaying the Days of Week.
    /// </summary>
    private void DisplayDayOfWeek()
    {
        string query = "SELECT DISTINCT [Day of Week] AS Day_Of_Week FROM SG_CRIME";
        grdDayOfWeek.DataSource = GetList(query);
        grdDayOfWeek.DataBind();
    }

    /// <summary>
    /// This is a function that will return records based on the query defined.
    /// </summary>
    /// <param name="queryString">A valid SQL Statement</param>
    /// <returns></returns>
    private DataTable GetList(string queryString)
    {

        /*
         * Set the correct connections string here.
         * The following properties must have a correct value:
         * Data Source - This is the server name of the database
         * Initial Catalog - This is the database name
         * User Id - Username used to connect to the database
         * Password - The Password of the user.
         */
        string conn = "data source=localhost;initial catalog=IntegeoDemo;user
id=sa;password=Password2011";

        SqlConnection cnn = new SqlConnection(conn);
        SqlCommand cmd = new SqlCommand(queryString, cnn);
        SqlDataAdapter da;
        DataTable tbl = new DataTable();
        try
        {
            cnn.Open();
        }
        catch (SqlException ex)
        {
            throw ex;
        }

        da = new SqlDataAdapter(cmd);
        try
        {
            da.Fill(tbl);
            cnn.Close();

        }
        catch (SqlException ex)
        {
            throw ex;
        }
        finally
        {
            cmd.Dispose();
            cnn.Dispose();
        }

        return tbl;

    }

    /// <summary>
    /// The btnViewReport_Click is in charge of rendering the SG Crime Analysis Report in the
Web Page.
    /// </summary>
    /// <param name="sender"></param>
    /// <param name="e"></param>
    protected void btnViewReport_Click(object sender, EventArgs e)
    {
        //The value of the reportPath variable is the Path of the SG Crime Analysis Report in
the Report Server
        string reportPath = @"/Integeo Demo Reports/SG Crime Analysis";

        List<string> crimeStatus = new List<string>();
        List<string> dayOfWeek = new List<string>();
        List<string> crimeType = new List<string>();
        List<string> valueOfCrime = new List<string>();

        ReportParameter[] parm = new ReportParameter[4];

        //Iterate through the Crime Status Grid and get the value of the selected item
        foreach (GridViewRow rowItem in grdCrimeStatus.Rows)
        {
            CheckBox chk = (CheckBox)rowItem.FindControl("chkItem");
            if (chk.Checked == true && rowItem.RowType == DataControlRowType.DataRow)
            {
                Label lbl = (Label)rowItem.FindControl("lblCrimeStatus");
                crimeStatus.Add(lbl.Text);
            }
        }

        parm[0] = new ReportParameter("CrimeStatus", crimeStatus.ToArray());


        //Iterate through the Day of Week Grid and get the value of the selected item
        foreach (GridViewRow rowItem in grdDayOfWeek.Rows)
        {
            CheckBox chk = (CheckBox)rowItem.FindControl("chkItem");
            if (chk.Checked == true && rowItem.RowType == DataControlRowType.DataRow)
            {
                Label lbl = (Label)rowItem.FindControl("lblDayOfWeek");
                dayOfWeek.Add(lbl.Text);
            }
        }

        parm[1] = new ReportParameter("DayOfWeek", dayOfWeek.ToArray());


        //Iterate through the Crime Type Grid and get the value of the selected item
        foreach (GridViewRow rowItem in grdCrimeType.Rows)
        {
            CheckBox chk = (CheckBox)rowItem.FindControl("chkItem");
            if (chk.Checked == true && rowItem.RowType == DataControlRowType.DataRow)
            {
                Label lbl = (Label)rowItem.FindControl("lblCrimeType");
                crimeType.Add(lbl.Text);
            }
        }

        parm[2] = new ReportParameter("CrimeType", crimeType.ToArray());


        //Iterate through the Value Of Crime Grid and get the value of the selected item
        foreach (GridViewRow rowItem in grdValueOfCrime.Rows)
        {
            CheckBox chk = (CheckBox)rowItem.FindControl("chkItem");
            if (chk.Checked == true && rowItem.RowType == DataControlRowType.DataRow)
            {
                Label lbl = (Label)rowItem.FindControl("lblValueOfCrime");
                valueOfCrime.Add(lbl.Text);
            }
        }

        parm[3] = new ReportParameter("Band", valueOfCrime.ToArray());

        rptVw.ServerReport.ReportPath = reportPath;
        ReportingObject.RenderReport(rptVw, parm);
        MapFrame.Attributes.Add("src", ReportingObject.GetMapURL(rptVw,
Page.User.Identity.Name));
        MapFrame.Visible = true;
    }

    /// <summary>
    /// This Method is used to refresh the report based on the selection made on the map.
    /// </summary>
    /// <param name="sender"></param>
    /// <param name="e"></param>
    protected void btnGetMapFilter_Click(object sender, EventArgs e)
    {
        string reportPath = @"/Integeo Demo Reports/SG Crime Analysis";

        rptVw.ServerReport.ReportPath = reportPath;
        MapFrame.Attributes.Add("src", ReportingObject.GetMapFilter(rptVw,
Page.User.Identity.Name));
        MapFrame.Visible = true;
    }
}
```

22. To view the web page, click ▶ on the toolbar area as shown below:

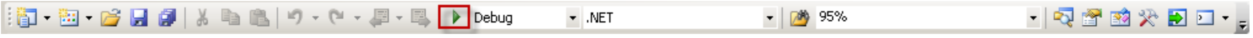
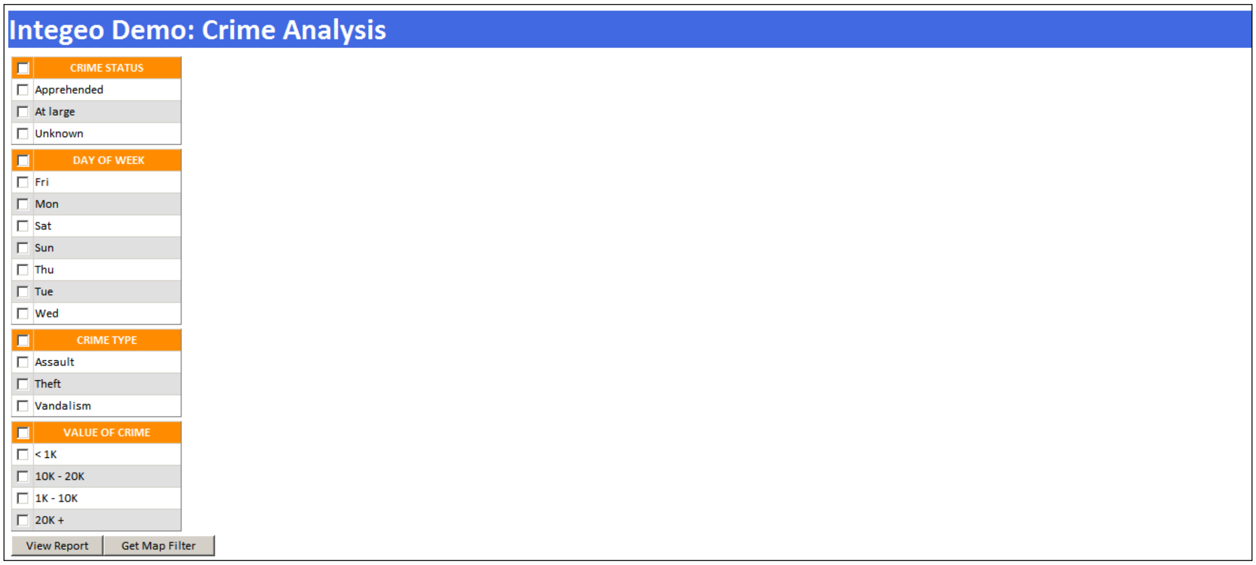


Figure 31 The Debug/Run Button

23. On the web page you should be able to see the following screen:



Integeo Demo: Crime Analysis

□ CRIME STATUS

□ Apprehended
□ At large
□ Unknown

□ DAY OF WEEK

□ Fri
□ Mon
□ Sat
□ Sun
□ Thu
□ Tue
□ Wed

□ CRIME TYPE

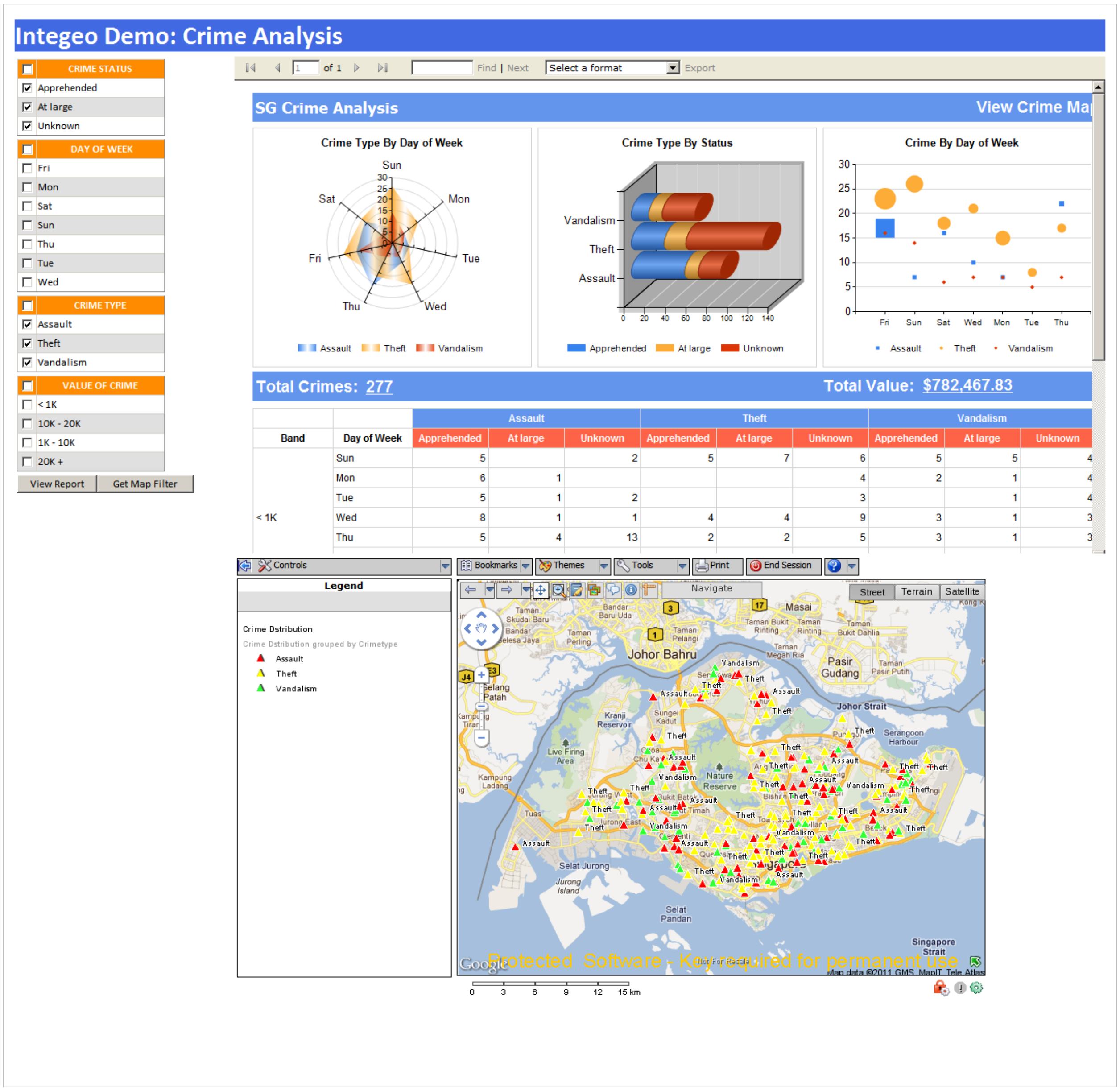
□ Assault
□ Theft
□ Vandalism

□ VALUE OF CRIME

□ < 1K
□ 10K - 20K
□ 1K - 10K
□ 20K +

Figure 32 Selection Screen

24. Try to make some selections by checking a value from the available paramaters and click View Report. This will show you the following screen:



Integeo Demo: Crime Analysis

□ CRIME STATUS
☑ Apprehended
☑ At large
☑ Unknown

□ DAY OF WEEK
□ Fri
□ Mon
□ Sat
□ Sun
□ Thu
□ Tue
□ Wed

□ CRIME TYPE
☑ Assault
☑ Theft
☑ Vandalism

□ VALUE OF CRIME
□ < 1K
□ 10K - 20K
□ 1K - 10K
□ 20K +

View Report | Get Map Filter

SG Crime Analysis

Total Crimes: 277

Total Value: $782,467.83

		Assault			Theft			Vandalism		
Band	Day of Week	Apprehended	At large	Unknown	Apprehended	At large	Unknown	Apprehended	At large	Unknown
< 1K	Sun	5		2	5	7	6	5	5	4
	Mon	6	1				4	2	1	4
	Tue	5	1	2			3		1	4
	Wed	8	1	1	4	4	9	3	1	3
	Thu	5	4	13	2	2	5	3	1	3

Crime Dstribution

Crime Dstribution grouped by Crimetype

Figure 33 Sample Asp.Net with Report and Embedded Map Viewer

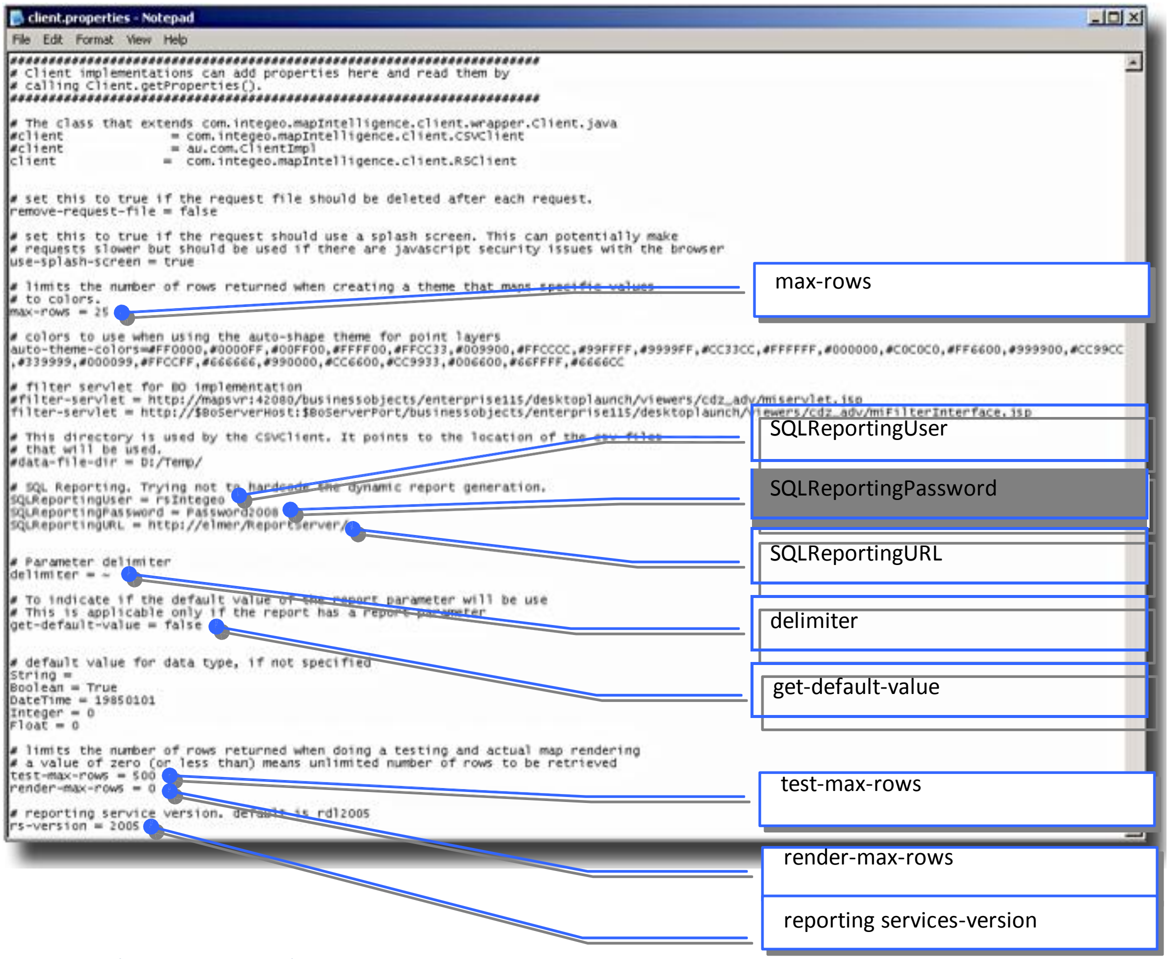
CLIENT.PROPERTIES

The *client.properties* file contains some properties for the *MIRS* configuration application. To update, locate this file through

[install-dir]\tomcat\webapps\miclient\WEB-INF\properties\client

Make sure to restart the *MIRS Configuration Server* to apply the changes made.

1. Open the *client.properties* file.



```
######################################################################
# Client implementations can add properties here and read them by
# calling Client.getProperties().
######################################################################

# The class that extends com.integeo.mapIntelligence.client.wrapper.Client.java
#client              = com.integeo.mapIntelligence.client.CSVClient
#client              = au.com.ClientImpl
client              =  com.integeo.mapIntelligence.client.RSClient


# set this to true if the request file should be deleted after each request.
remove-request-file = false

# set this to true if the request should use a splash screen. This can potentially make
# requests slower but should be used if there are javascript security issues with the browser
use-splash-screen = true

# limits the number of rows returned when creating a theme that maps specific values
# to colors.
max-rows = 25

# colors to use when using the auto-shape theme for point layers
auto-theme-colors=#FF0000,#0000FF,#00FF00,#FFFF00,#FFCC33,#009900,#FFCCCC,#99FFFF,#9999FF,#CC33CC,#FFFFFF,#000000,#C0C0C0,#FF6600,#999900,#CC99CC
,#339999,#000099,#FFCCFF,#666666,#990000,#CC6600,#CC9933,#006600,#66FFFF,#6666CC

# filter servlet for BO implementation
#filter-servlet = http://mapsvr:42080/businessobjects/enterprise115/desktoplaunch/viewers/cdz_adv/miservlet.jsp
filter-servlet = http://$BoServerHost:$BoServerPort/businessobjects/enterprise115/desktoplaunch/viewers/cdz_adv/miFilterInterface.jsp

# This directory is used by the CSVClient. It points to the location of the csv files
# that will be used.
#data-file-dir = D:/Temp/

# SQL Reporting. Trying not to hardcode the dynamic report generation.
SQLReportingUser = rsIntegeo
SQLReportingPassword = Password2008
SQLReportingURL = http://elmer/ReportServer/


# Parameter delimiter
delimiter = ~

# To indicate if the default value of the report parameter will be use
# This is applicable only if the report has a report parameter
get-default-value = false


# default value for data type, if not specified
String =
Boolean = True
DateTime = 19850101
Integer = 0
Float = 0

# limits the number of rows returned when doing a testing and actual map rendering
# a value of zero (or less than) means unlimited number of rows to be retrieved
test-max-rows = 500
render-max-rows = 0

# reporting service version. default is rdl2005
rs-version = 2005
```

Figure 16 client.properties File.

2. Set `max-rows` to a value corresponding to the number of distinct values that must be retrieved for the provided column in the **Configure** tab of the Theme Builder. *See the following figure*.

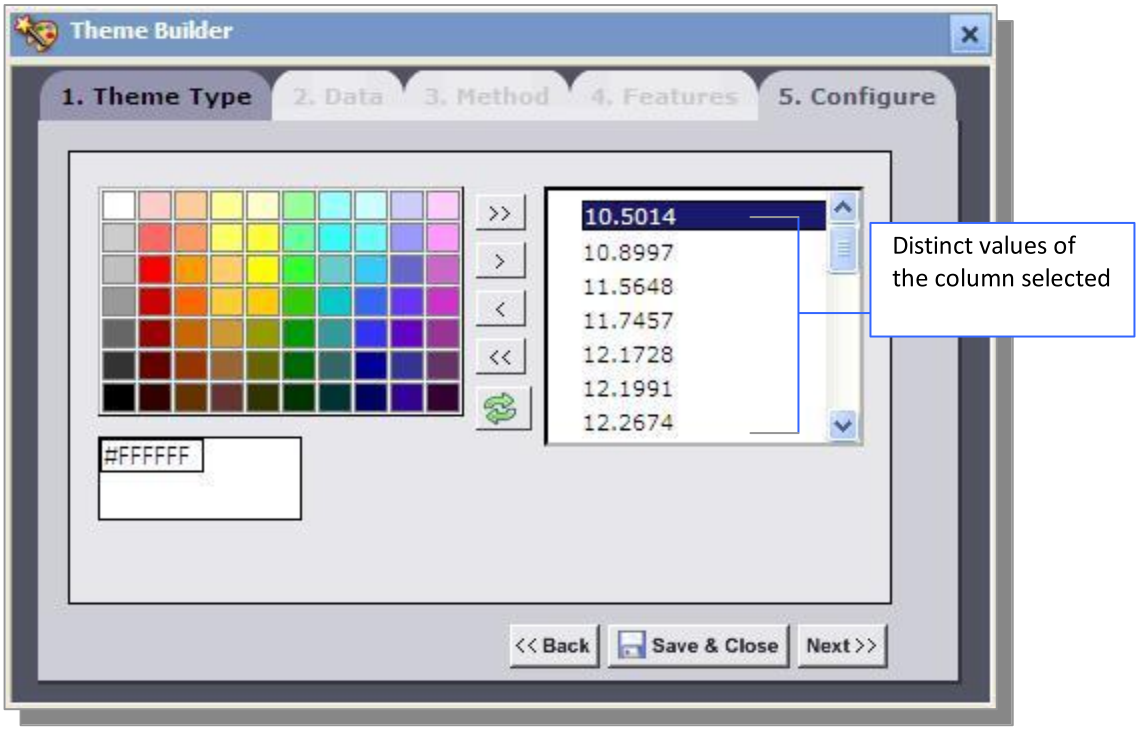


Figure 17 Configure Tab of Theme Builder with sample of retrieved values related to the max-rows setting.

3. Set `SQLReportingUser` to the userID used in accessing the Report Server from which the MI Runtime Client will connect.

4. Set `SQLReportingPassword` to the password used in accessing the Report Server from which the MI Runtime Client will connect.

5. Set `SQLReportingURL` to the URL for accessing the Report Server from which the MI Runtime Client will connect.

6. Set `delimiter` to a character used to delimit parameters in RS Report.

7. Set `get-default-value` to "True" if the MIRS Configuration will use the default value of the report parameter when retrieving data from the Report Server.

   Note This is applicable only during design time or configuration (creating a map template).

8. Set `test-max-rows` to a value corresponding to the number of rows/data to be used when rendering the map during the design time or configuration.

   Note A value of zero means that the application will retrieve all the data. This property affects the `max-rows` property, in which the lesser the `test-max-rows` property, the lesser the data retrieved, Hence, a smaller number of distinct values will be displayed.

9. Set `render-max-rows` to a value corresponding to the number of rows/data to be used when rendering the map during runtime (BI Server/Report Server requesting the map).

10. Set reporting `services-version` to version of the Report Server to be used.

Note

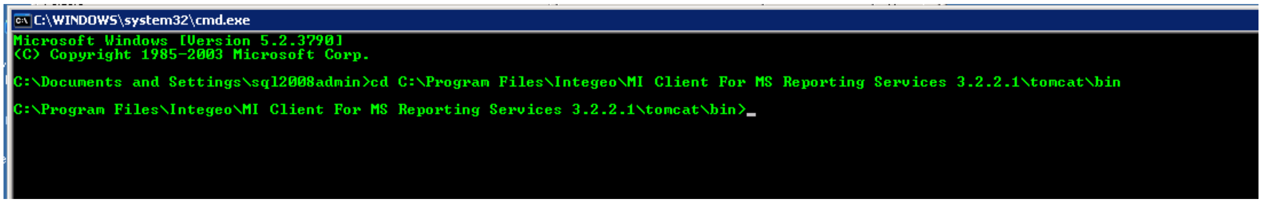
Versions 2005 and 2008 are currently supported.
If `reporting services-version` is unspecified, default is the 2005 version. For optimum performance, specify the exact version of the Report Server.

UPDATE THE SQL REPORTING USER NAME AND PASSWORD IN CONFIG.PROPERTIES

In case you need to replace the SQL Reporting user name and password in config.properties.

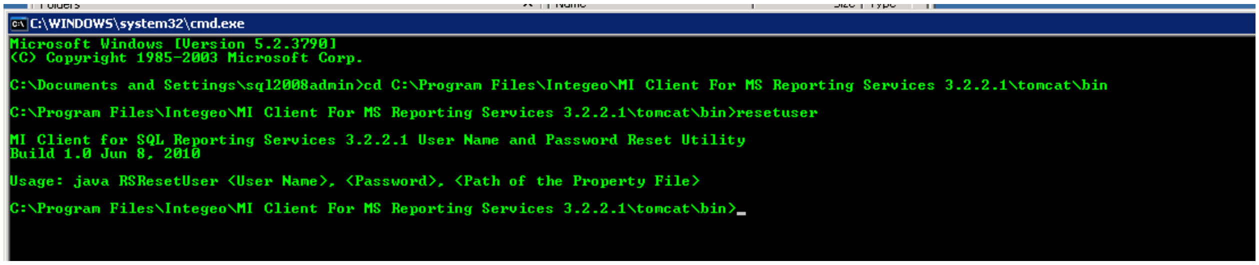
USING THE COMMAND PROMPT

1.) Open the command prompt on the MI Client for Reporting Services and change the directory to tomcat\bin.



```
C:\WINDOWS\system32\cmd.exe
Microsoft Windows [Version 5.2.3790]
(C) Copyright 1985-2003 Microsoft Corp.

C:\Documents and Settings\sql2008admin>cd C:\Program Files\Integeo\MI Client For MS Reporting Services 3.2.2.1\tomcat\bin

C:\Program Files\Integeo\MI Client For MS Reporting Services 3.2.2.1\tomcat\bin>_
```

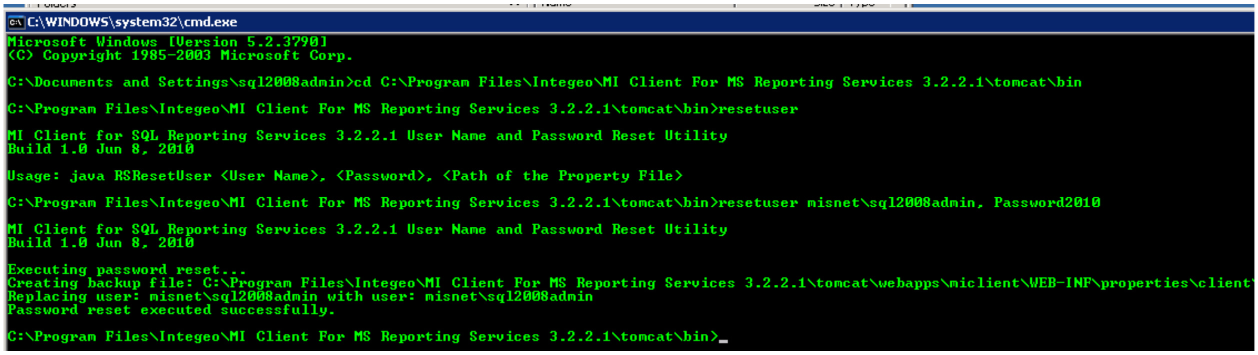
2.) Type resetuser and then press the Enter key.



```
C:\WINDOWS\system32\cmd.exe
Microsoft Windows [Version 5.2.3790]
(C) Copyright 1985-2003 Microsoft Corp.

C:\Documents and Settings\sql2008admin>cd C:\Program Files\Integeo\MI Client For MS Reporting Services 3.2.2.1\tomcat\bin

C:\Program Files\Integeo\MI Client For MS Reporting Services 3.2.2.1\tomcat\bin>resetuser

MI Client for SQL Reporting Services 3.2.2.1 User Name and Password Reset Utility
Build 1.0 Jun 8, 2010

Usage: java RSResetUser <User Name>, <Password>, <Path of the Property File>

C:\Program Files\Integeo\MI Client For MS Reporting Services 3.2.2.1\tomcat\bin>_
```

3.) To replace the SQL Reporting username and password, type Resetuser <User Name>, <Password>, <Path of the Property File {this parameter is optional}>

Note: the path of the property file is defined during the installation of the MI Client for Reporting Services.



C:\WINDOWS\system32\cmd.exe

```
Microsoft Windows [Version 5.2.3790]
(C) Copyright 1985-2003 Microsoft Corp.

C:\Documents and Settings\sql2008admin>cd C:\Program Files\Integeo\MI Client For MS Reporting Services 3.2.2.1\tomcat\bin

C:\Program Files\Integeo\MI Client For MS Reporting Services 3.2.2.1\tomcat\bin>resetuser

MI Client for SQL Reporting Services 3.2.2.1 User Name and Password Reset Utility
Build 1.0 Jun 8, 2010

Usage: java RSResetUser <User Name>, <Password>, <Path of the Property File>

C:\Program Files\Integeo\MI Client For MS Reporting Services 3.2.2.1\tomcat\bin>resetuser misnet\sql2008admin, Password2010

MI Client for SQL Reporting Services 3.2.2.1 User Name and Password Reset Utility
Build 1.0 Jun 8, 2010

Executing password reset...
Creating backup file: C:\Program Files\Integeo\MI Client For MS Reporting Services 3.2.2.1\tomcat\webapps\miclient\WEB-INF\properties\client
Replacing user: misnet\sql2008admin with user: misnet\sql2008admin
Password reset executed successfully.

C:\Program Files\Integeo\MI Client For MS Reporting Services 3.2.2.1\tomcat\bin>_
```

4.) Verify if the password reset has been successfully executed as shown above.

5.) Restart the MIC Client

- From **Start > All Programs > Pitney Bowes >MI Client for MS Reporting Services 3.2.2**, select **Stop MI Client for MS Reporting Services 3.2.2**.

- From **Start > All Programs > Pitney Bowes >MI Client for MS Reporting Services 3.2.2**, select **Start MI Client for MS Reporting Services 3.2.2**.

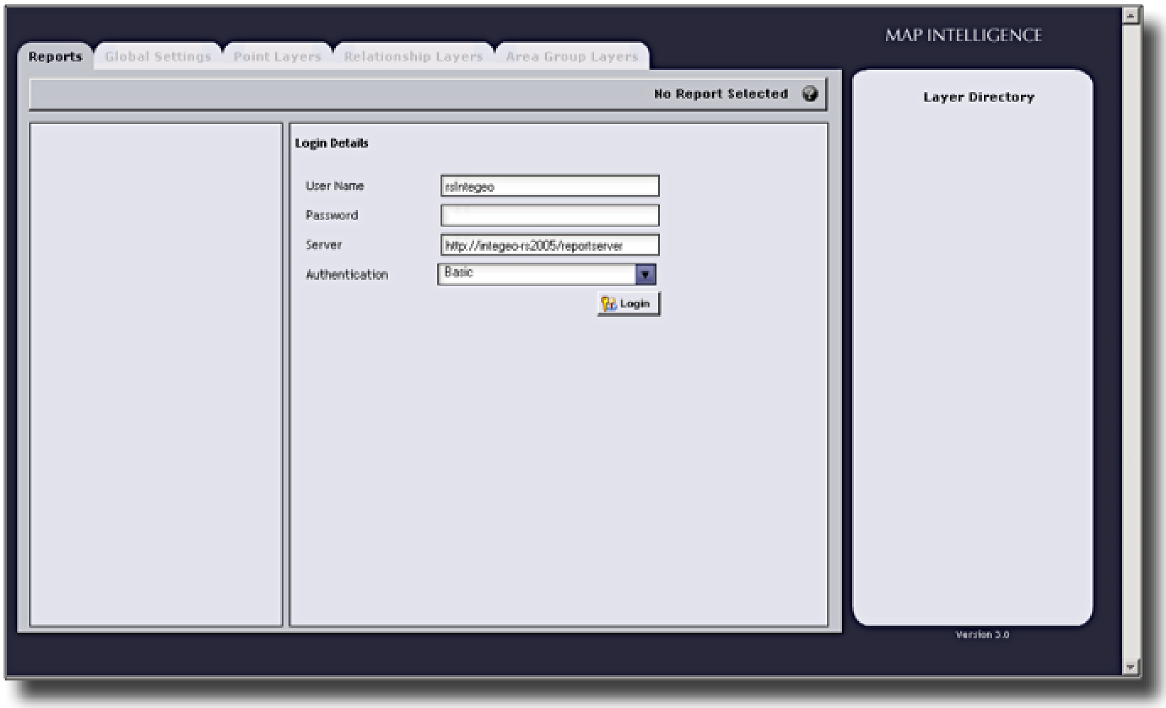
REPORTING SERVICES 2008 WINDOWS AUTHENTICATION (NTLM)

Windows Authentication (NTLM) is now supported and the configuration of the Basic Authentication for RS 2008 is no longer required to successfully access the *MI Client Configuration* application.

ACCESSING THE MIRS CONFIGURATION APPLICATION

1. Launch an IE6 browser and access the following: http://<machine-name>:<port number>/miclient, where the machine-name and port number are those of the configuration server.

   The *MIRS 3.2.3 Login* page displays.



Login Details

User Name: rslntegeo

Password:

Server: http://integeo-rs2005/reportserver

Authentication: Basic

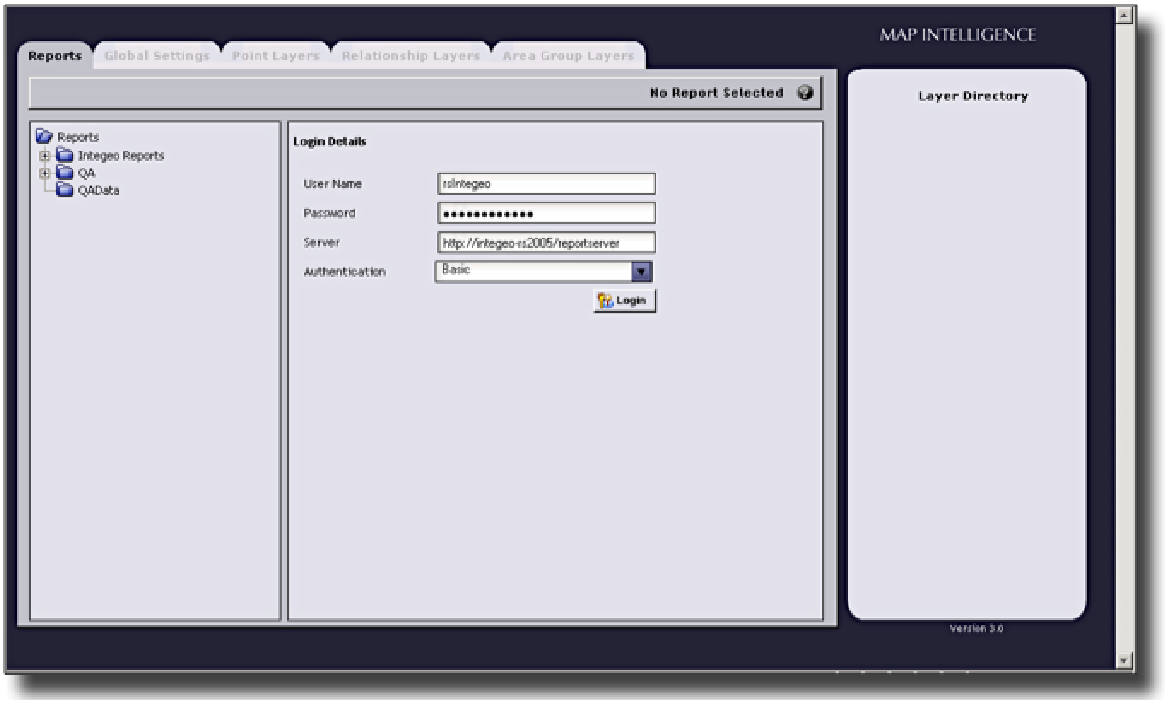
Figure 18 MIRS Configuration Login.

Note

- The **machine-name** refers the machine you are trying to open a connection to (ex: ip address or workstation name)
- To p**ort number** is the port number on which the server you are trying to connect to is running. This is the same port number specified in the Server Settings upon MIRS installation.

2. Type the **User Name**, **Password**, **Server** location and the **Authentication** type on the fields.

3. Click the **Login** button. A successful login is indicated by the display of the reports folder on the right.



Login Details

User Name: rsIntegeo

Password: ••••••••••••••

Server: http://integeo-rs2005/reportserver

Authentication: Basic

Figure 19 Reports Explorer.

4. Expand the report folder to view the list of reports.

5. Select a report. The page loads to display the *Global Settings* for the selected report.

MIRS CONFIGURATION

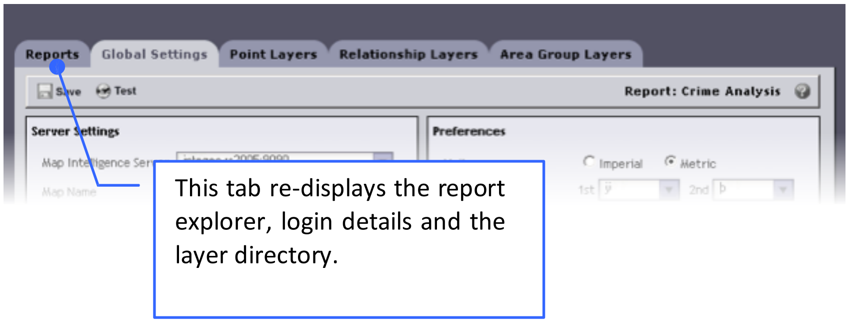
OVERVIEW

This section looks at the steps required in configuring your analysis layers.

CONFIGURATION SCREENS

There are four configuration screens:

- Global Settings
- Point Layers
- Relationship Layers
- Area Group Layers



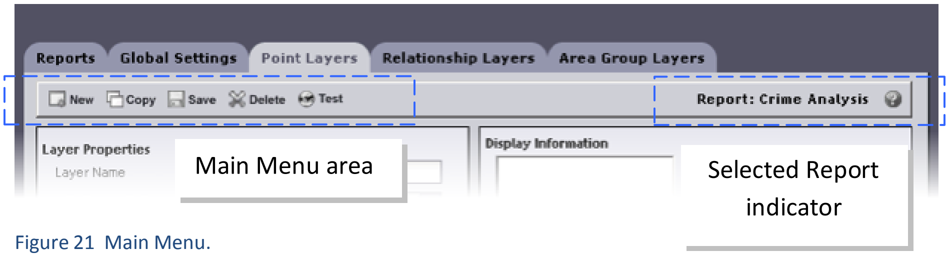
This tab re-displays the report explorer, login details and the layer directory.

Figure 20 Configuration Tabs.

Each configuration screen can be accessed by clicking the relevant tab at the top of the screen.

CONFIGURATION SCREEN MAIN MENU

The Main Menu appears at the top of each configuration screen.



Main Menu area

Selected Report indicator

Figure 21 Main Menu.

The following table explains the features of the Main Menu.

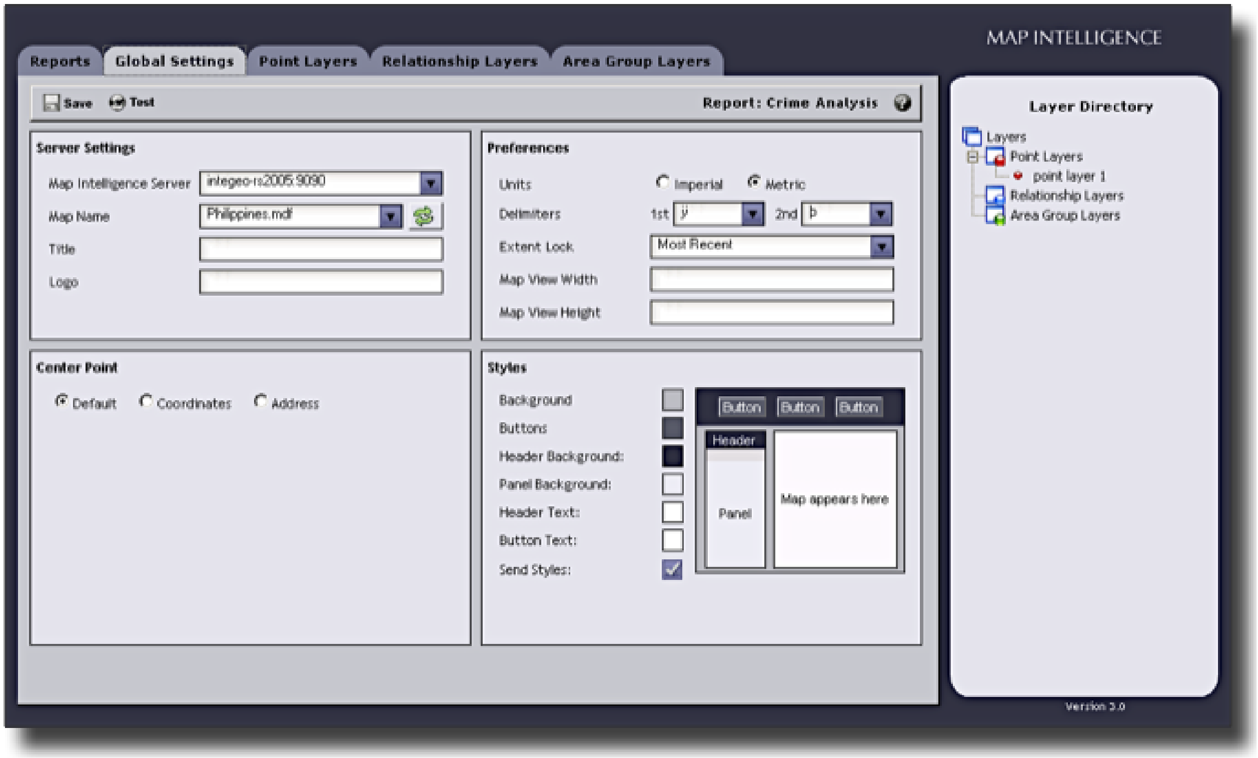
Menu Item	Description
Test	To test your configuration settings, click the **Test** button, a new browser window will open displaying your layer configuration.
New	To clear all fields and set the properties for a new layer, click the **New** button. This button does not feature on the Global Settings Main Menu.
Copy	To make a copy of a layer, click the **Copy** button. This button does not feature on the Global Settings Main Menu.
Save	To save your configuration screen settings, click the **Save** button. **Note**: This button is global and will save **all** changes made to **all** configuration screens.
Delete	To delete a layer, click the **Delete** button. **Note**: To permanently remove the layer you must click the **Save** button. This button does not feature on the Global Settings Main Menu.
Report:	The name of your report displays in the Main Menu bar.
?	To open the MIRS Help, click the **Help** button.

GLOBAL SETTINGS

The Global Settings screen allows you to configure the settings for your Map Intelligence Server as well as the properties of the underlying map to be used for your analysis.

➤ *To open the Global Settings screen*

1. Click **Global Settings**. The *Global Settings* configuration screen displays.



Report: Crime Analysis

Server Settings
Map Intelligence Server: integeo-rs2005:9090
Map Name: Philippines.mdf
Title:
Logo:

Preferences
Units: ○ Imperial ● Metric
Delimiters: 1st ÿ 2nd þ
Extent Lock: Most Recent
Map View Width:
Map View Height:

Center Point: ● Default ○ Coordinates ○ Address

Styles
Send Styles: ☑

Figure 22 Global Settings Screen.

SERVER SETTINGS SECTION

The Server Settings section allows you to specify the Map Intelligence Server and underlying map to be used for the analysis.

➤ *To configure the Server Settings*

1. On the **Map Intelligence Server** field, enter the Map Intelligence server and port to use. Previously entered servers are available from the drop-down list.

2. On the **Map Name** drop-down list, select the map to display the analysis layers.

Note

- The **Map Name** drop-down list contains all the maps that have been added during the Map Intelligence server configuration. Consult your Map Intelligence Server Administrator if the map you wish to use is not available in the drop-down list.

- To refresh the **Map Name** drop-down list, click .

3. On the **Title** field, type the title of the map. The indicated title appears at the top panel of the Mapping Viewer. This field is optional. *See the following figure*.

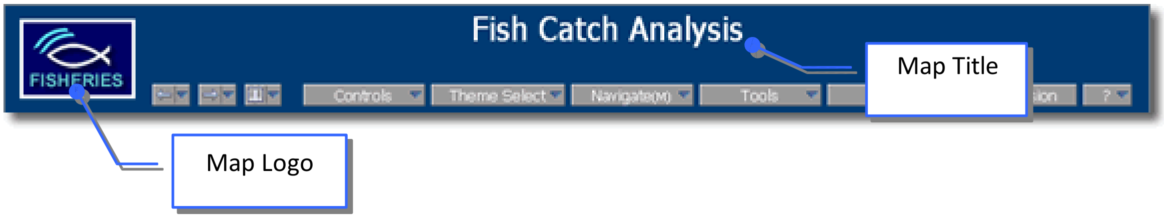
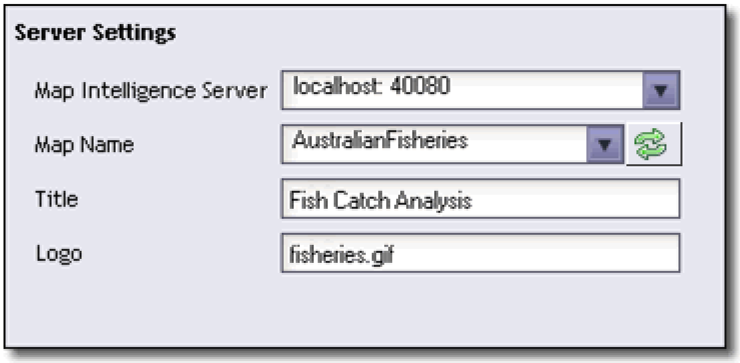


Figure 23 Mapping Viewer Top Panel showing the title, "Fish Catch Analysis" and Fisheries Logo.

4. On the **Logo** field, type the file name of the image to use as a map logo. This image appears at the top panel of the Mapping Viewer. This field is optional. *See the preceding figure*.

Note

The specified file for the logo must be located in the Images folder of the Map Intelligence directory on the server machine. The recommended size for the image is 70 x 70 pixels. Larger images may cover some elements or change the format of the Mapping Viewer



Server Settings

Map Intelligence Server: localhost: 40080

Map Name: AustralianFisheries

Title: Fish Catch Analysis

Logo: fisheries.gif

Figure 24 Server Settings Section.

CENTER POINT SECTION

Setting the Center Point controls the way your map is initially displayed on opening.

- **Default** – selects a center point by plotting all the points specified by the visible point layers and takes the center point of all points. If no point layers are set as visible, the Center point is taken from visible Region layers (i.e. Relationship or Area Group Layers).

- **Coordinates** – allows you to specify a coordinate to set as the center point for the map. If you select this option, you will need to specify the latitude and longitude values for your center point. You must specify a map width or the default center point will be used.

- **Address** – allows you to specify a valid street address to set as the center point for the map. If you select this option, you will need to specify the street/address, suburb/city, state and post code/zip code values for your center point. You must specify a map width or the default center point will be used.

➢ *To set the Center Point using Coordinates*

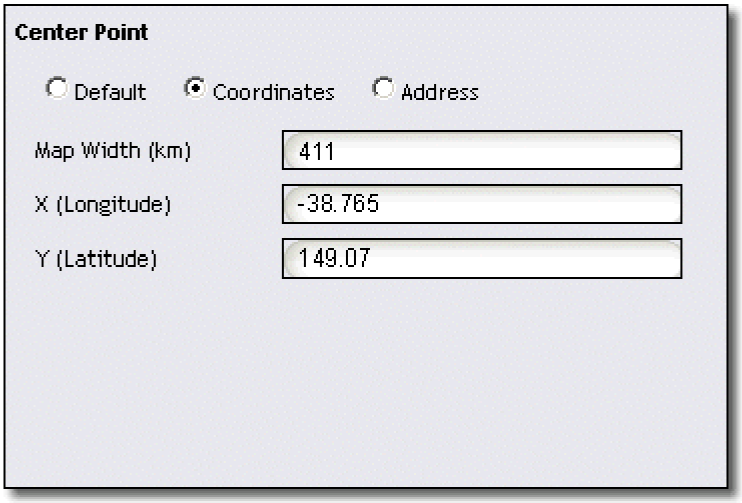
5. Click the **Coordinates** radio button.

6. In the **Map Width** field, type in the width of the map to be initially displayed.

Note

This value is in kilometers or miles depending on the unit of measurement selected in the Units section (see Preferences below). If you do not specify a map width, Map Intelligence will apply a default width that will display all your points. In this case, it is recommended that you select Default as your Center Point option.

3. In the **X (Longitude)** and **Y (Latitude)** fields enter the coordinates for the center point at which you wish the map to be initially displayed.



Center Point

○ Default ● Coordinates ○ Address

Map Width (km)	411
X (Longitude)	-38.765
Y (Latitude)	149.07

Figure 25 Center Point Section – Coordinates Option.

Note

- For maps with projected coordinate systems, when setting Center Point properties, the Y coordinate (or Northing) is set in the latitude field and the X coordinate (or Easting) in the longitude field. These settings are in the units of the underlying map, usually meters rather than degrees.
- For maps with projected coordinate systems the longitude is set to the column of the X coordinate and the latitude is set to the column of the Y coordinate in Point layers.

➢ *To set the Center Point using an Address*

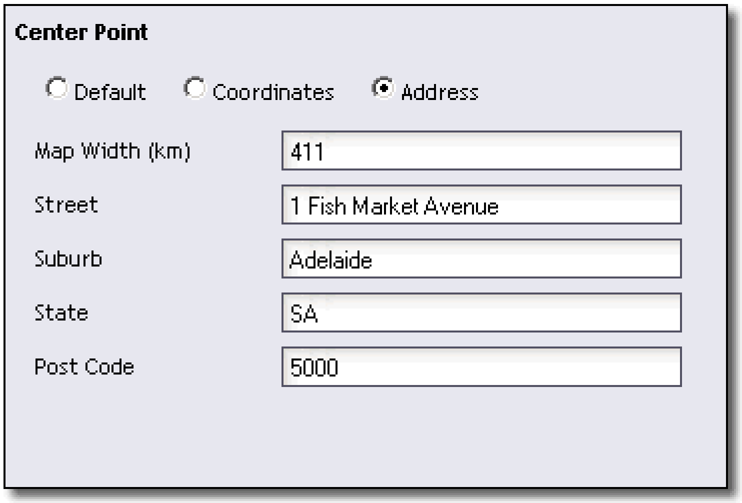
1. Click the **Address** radio button.

2. In the **Map Width** field, type in the width of the map to be initially displayed.

Note

This value is in kilometers or miles depending on the unit of measurement selected in the Units section (see Preferences below). If you do not specify a map width, Map Intelligence will apply a default width that will display all your points. In this case, it is recommended that you select Default as your Center Point option.

3. In the **Street**, **City**, **State** and **Post/Zip Code** fields, type the address details for the center point at which you wish the map to be initially displayed.



Center Point

○ Default ○ Coordinates ● Address

Map Width (km): 411

Street: 1 Fish Market Avenue

Suburb: Adelaide

State: SA

Post Code: 5000

Figure 26 Center Point Section – Address Option.

PREFERENCES SECTION

The Preferences section allows you to configure properties of the Mapping Viewer.

➤ ***To configure the Preference Section***

1. Select the **Units** radio button for the measurement that you would like to use for your analysis.
   - Imperial (miles, feet)
   - Metric (kilometers, meters)

2. On the **1st Delimiter** drop-down list, select a character to act as a separator for your data as it is sent to the Map Intelligence Server.

3. On the **2nd Delimiter** drop-down list, select a second character to act as a separator for your data as it is sent to the Map Intelligence Server.

   Note The delimiter characters act as a separators for your data as they are sent to the Map Intelligence Server. The characters that do not exist within the data to avoid errors must be selected. The default character for the 1st Delimiter is ÿ and the default character for the 2nd Delimiter is þ.

4. On the **Extent Lock** drop-down list, select an the extent lock option.

   Note The Extent Lock determines the map extent to be used when a user makes a new map request from the client. The lock extent options are listed below:

   - *Most Recent*: The last viewed extent will be used.
   - *No Lock*: The extent will be calculated on a bounding box around the visible data.
   - *Disabled*: The extent lock will be based on the Extent Lock setting selected by the user in the Mapping Viewer.

   If a center point is specified in the Center Point Section, the view of the map adheres to this center point. Subsequent requests in the session adhere to the lock specified by the client.

5. On the **Map View Width** field, type the width of the Map View in pixels.

Note

The Map View Width and Height settings override the default settings set by the Server Administrator.

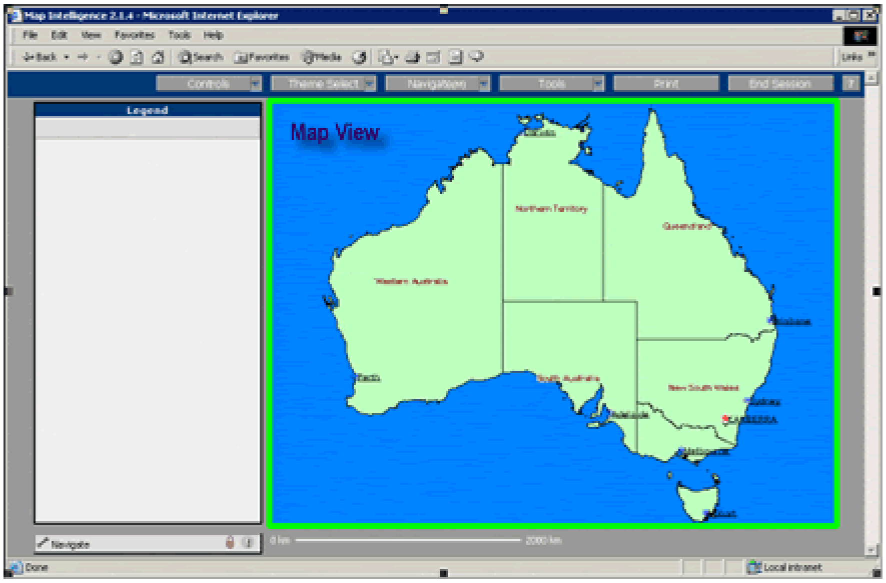
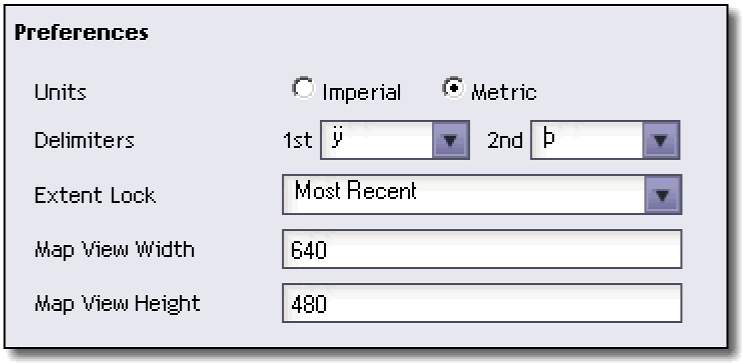


Figure 27 Mapping Viewer showing the Map View highlighted in green.



Preferences

Units ○ Imperial ● Metric

Delimiters 1st ÿ 2nd þ

Extent Lock Most Recent

Map View Width 640

Map View Height 480

Figure 28 Preferences Section.

STYLES SECTION

The Styles section allows you to configure the look and feel of the Mapping Viewer. The color of the following elements can be changed:

- Background
- Buttons
- Header Background
- Panel Background
- Header Text
- Button Text

➢ *To change the color of each element*

1. Click the colored rectangle next to the element name. A color picker displays.

2. Select the new color. The Style Preview displays the new color.

   Tip: If the color picker does not have the exact color you wish to use, you can right Click the colored rectangle and manually enter the hexadecimal color value.

3. Click the **Send Styles** checkbox ☑.

   Note: If the Send Styles checkbox is unchecked the Mapping Viewer will use the *Default Look and Feel* settings configured on the Map Intelligence Server.

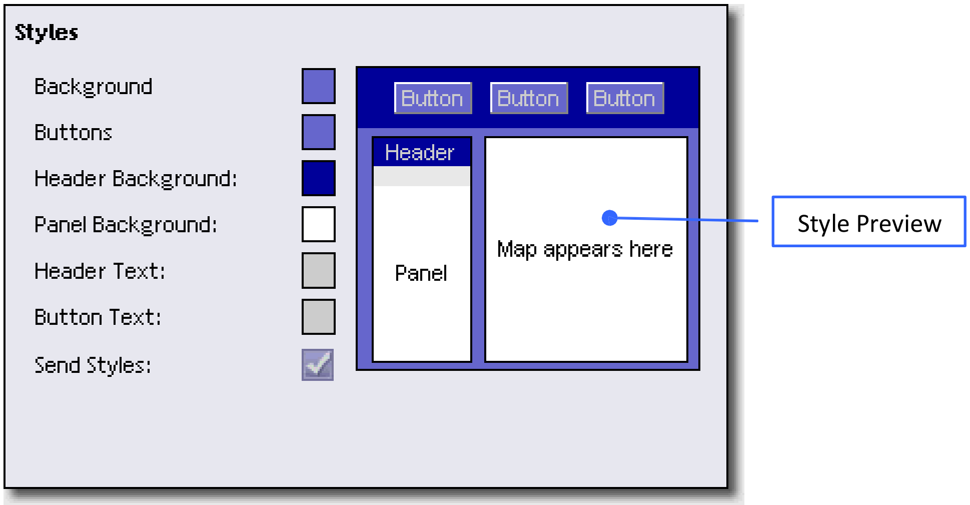
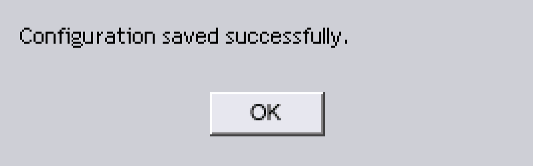


Figure 29 Styles Section showing a blue color scheme.

SAVING THE SETTINGS

➤ ***To save the Global Settings***

1. On the **Main Menu**, click Save. The following dialog box displays.



Configuration saved successfully.

Figure 30 Saved Configuration Confirmation Message.

2. Click **OK** to close.

Note

Clicking the **Save** button saves *all* changes made to all configuration screens.

MAP INTELLIGENCE LAYERS

OVERVIEW

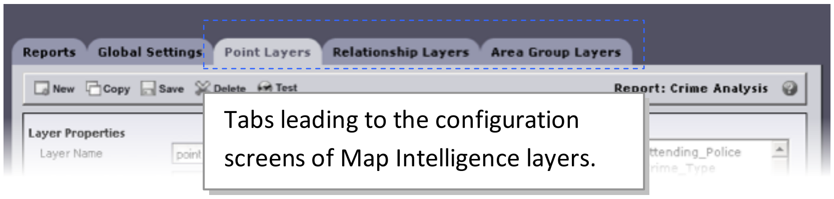
Maps are made up of layers. Map features such as roads, parks or traffic lights are held on different layers. Each map is composed of one or more layers that are superimposed to give the final map *look and feel*.

Layers that reside as part of the mapping environment are referred to as **built-in layers**. Layers created dynamically from external data sources are known as **Map Intelligence layers.**

There are currently four Map Intelligence layer types:

- Point Layers
- Radius Relationship Layers
- Region Relationship Layers
- Area Group Layers

See *Concepts – Layer Types* for a full description of Map Intelligence layers. The MIRS comes with configuration screens that allow you to create your Map Intelligence layers.

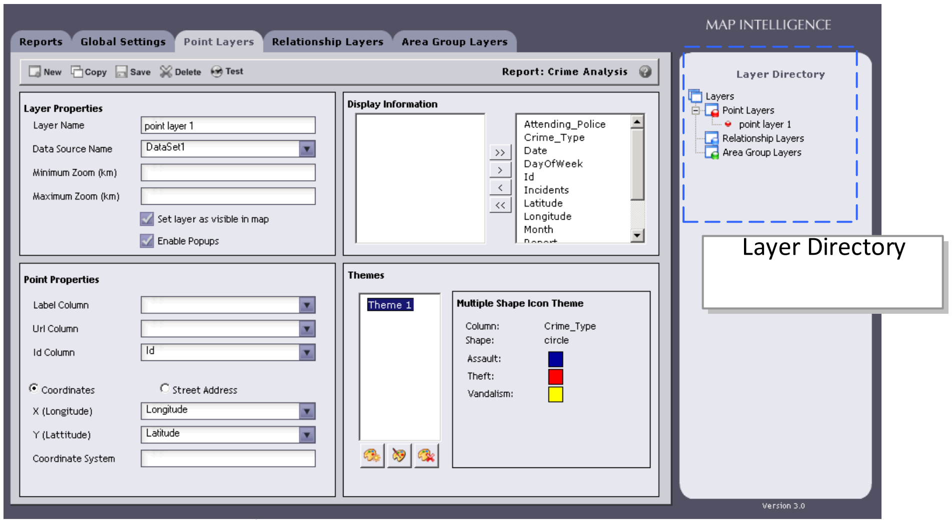


Tabs leading to the configuration screens of Map Intelligence layers.

Figure 31 Layer Configuration Tabs.

LAYER DIRECTORY

After a new layer is tested/saved, the layer is listed in the Layer Directory. This is located on the right of the configuration screens. This can be used to navigate and open the various Map Intelligence layers.



Layer Properties

Layer Name: point layer 1

Data Source Name: DataSet1

Minimum Zoom (km):

Maximum Zoom (km):

☑ Set layer as visible in map

☑ Enable Popups

Point Properties

Label Column:

Url Column:

Id Column: Id

● Coordinates ○ Street Address

X (Longitude): Longitude

Y (Lattitude): Latitude

Coordinate System:

Multiple Shape Icon Theme

Column: Crime_Type

Shape: circle

Assault: 🟦

Theft: 🟥

Vandalism: 🟨

Layer Directory

Figure 32 Point Layers Tab.

➤ ***To open a layer***

1. On the **Layer Directory**, click the plus icon next to **Layer Type** to expand and view the list of created layers.

2. Click the **Layer** to open.

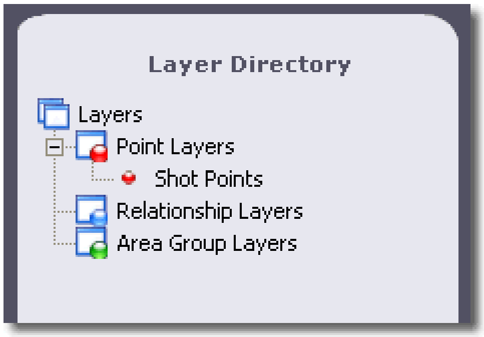


Figure 33 Layer Directory, showing the expanded Point Layer section.

Note Layers display on the map in the order that they appear in the Layer Directory sections. E.g. the first layer in the Layer Directory - Point Layer section of the will be the top-most layer in the map.

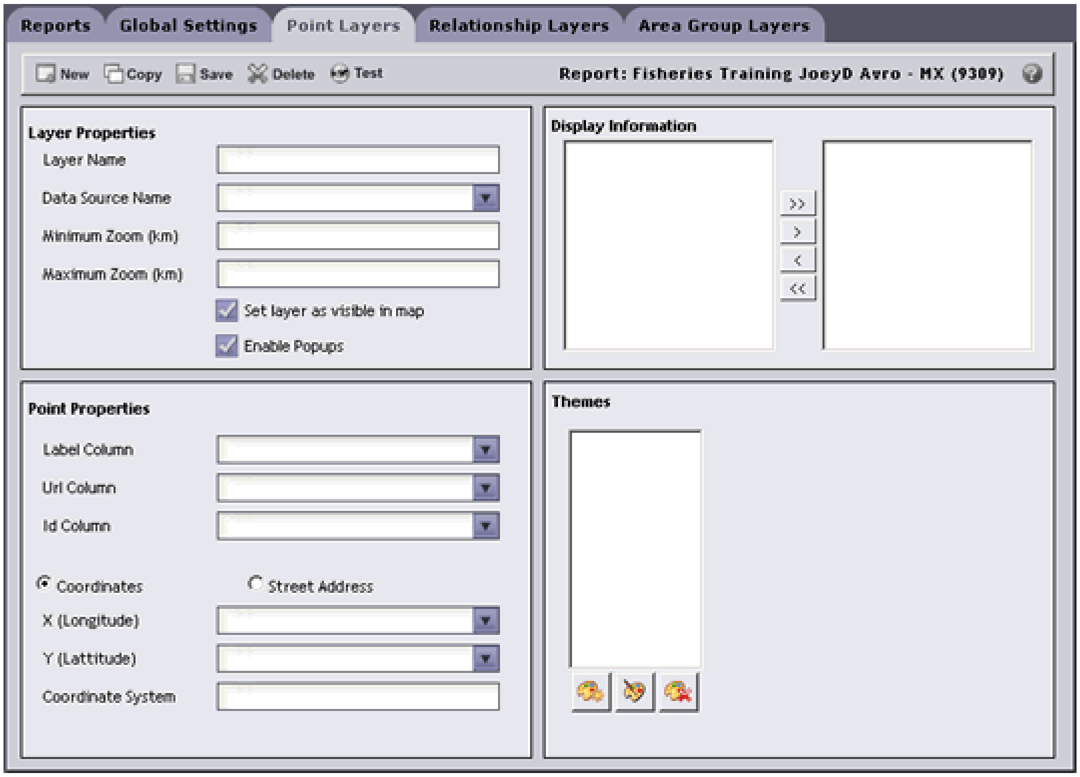
CONFIGURE POINT LAYERS

Note For a description of Point layers, see *Concepts – Layer Types – Point Layers*.

➤ ***To open the Point Layer configuration screen***

1. Click **Point Layers**. The *Point Layer* configuration screen displays.

2. On the **Main Menu**, click New. The fields are cleared for setting the properties of a new layer.



Report: Fisheries Training JoeyD Avro - MX (9309)

☑ Set layer as visible in map

☑ Enable Popups

● Coordinates ○ Street Address

Figure 34 Point Layer configuration screen.

LAYER PROPERTIES SECTION

To configure the Layer Properties section

1. On the **Layer Name** field, type the title for the layer.

Note Spaces can be used, but must not be used at the beginning or end of the layer name. For Map Intelligence Servers 3.1 or below, only letters, numbers and spaces may be used.

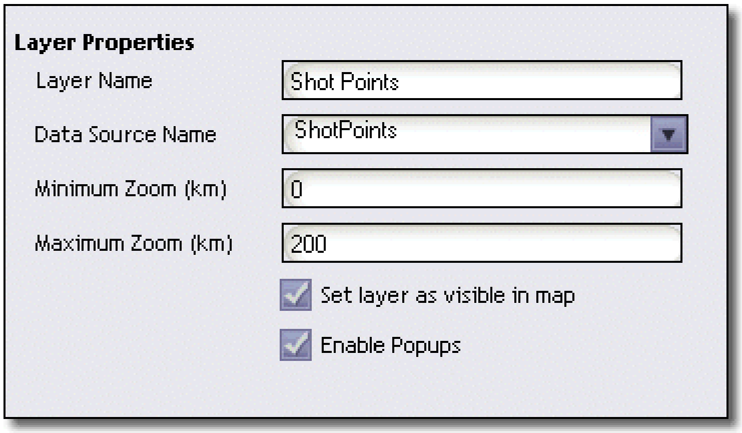
2. On the **Data Source Name** drop-down list, select the data source that contains the data to be used as points for this layer.

3. Specify a range in which the layer will be visible on the map by entering a **Minimum Zoom** and **Maximum Zoom** value. The layer will only be visible if the current map width is within the specified minimum and maximum zoom values.

4. Select the **Set Layer as Visible in Map** checkbox to make the layer visible on initial access of the Mapping Viewer.

5. Select the **Enable Popups** checkbox to enable information pop-ups on initial access of the Mapping Viewer.

Note *Information Pop-ups* provide further information about a point when you move your mouse over the point on the map (See Display Information below).


Layer Properties

Layer Name: Shot Points

Data Source Name: ShotPoints

Minimum Zoom (km): 0

Maximum Zoom (km): 200

☑ Set layer as visible in map

☑ Enable Popups

Figure 35 Layer Properties Section.

POINT PROPERTIES SECTION

➤ ***To configure the Point Properties section***

1. On the **Label Column** drop-down list, select a column that contains the values to appear on the labels for each point in the layer. Applying a label for each point in the layer is optional.

2. On the **Url Column** drop-down list, select a column that contains URLs associated with the points in the layer. Applying a URL for points in the layer is optional.

Note Multiple URLs can be assigned to a point using semi-colons to separate names and values. The following format is required for the column that is used as a url column

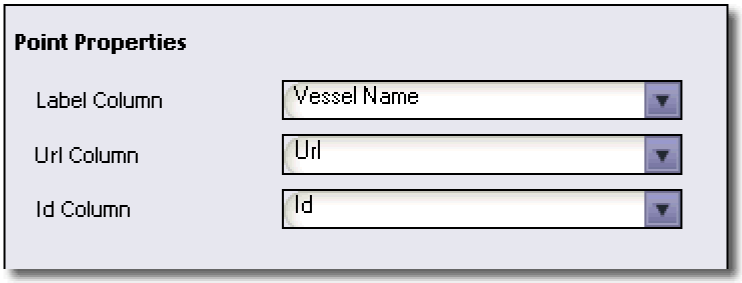
<Name>;<Url>;(space)<Name>;<Url>

For example:

"**Pitney Bowes Web Site;http://www.pitneybowes.com; Report;report.pdf**"

From Mapping Viewer, the **Active Points** tool can be used for points that have been assigned to a single URL. If a point has been assigned to multiple URLs, the active links can be viewed from the **Information Panel**. For further information on the Active Points and Information sections refer to the *Mapping Viewer User Manual*

3. On the **Id Column** drop-down list, select a column that contains unique values.



Point Properties

Label Column: Vessel Name

Url Column: Url

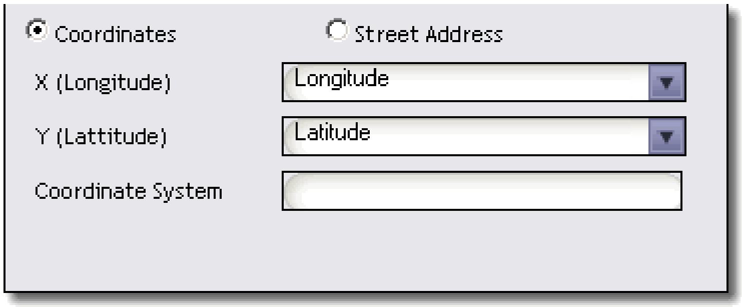
Id Column: Id

Figure 36 Point Properties section: Label, URL and Id Columns.

4. Select the radio button of the method to use in plotting points on the map: by *Coordinates* or by *Street Address*.

Note

- If “Coordinates” radio button, you must specify the columns that contain the Y (Latitude) and (X) Longitude values for each point must be specified. The coordinate systems to use for the layer can also be specified if the inherent coordinate system of the selected map is not intended for use. If “Street Address” is selected, the columns that contain the **Street/Address**, **City**, **State** and **Post Code/Zip Code** values for each point must be specified.
- A coordinate system provides a frame of reference for measuring locations on the surface of the earth. A full list of acceptable coordinate systems is available in the Coordinate Systems document. This field is optional.
- For maps with projected coordinate systems, when setting Center Point properties, the Y coordinate (or Northing) is set in the latitude field and the X coordinate (or Easting) in the longitude field. These settings are in the units of the underlying map, usually meters rather than degrees.
- For maps with projected coordinate systems the longitude is set to the column of the X coordinate and the latitude is set to the column of the Y coordinate in Point layers.



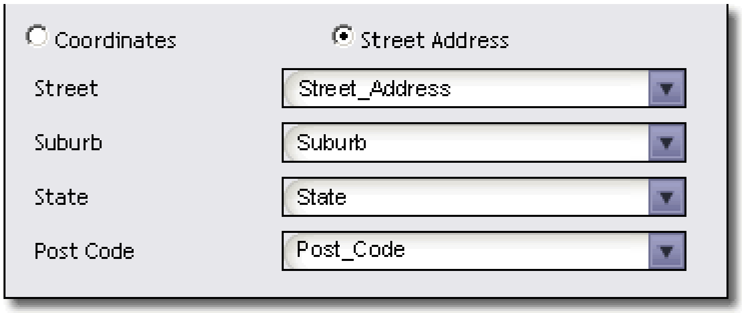
● Coordinates ○ Street Address

X (Longitude): Longitude

Y (Lattitude): Latitude

Coordinate System:

Figure 37 Point Properties Section – Coordinates Option.



○ Coordinates ● Street Address

Street: Street_Address

Suburb: Suburb

State: State

Post Code: Post_Code

Figure 38 Point Properties Section - Street Address option.

Note

The Street Address option will only work if a geocoder has been installed or in ArcIMS if the map layer is geocoded.

DISPLAY INFORMATION

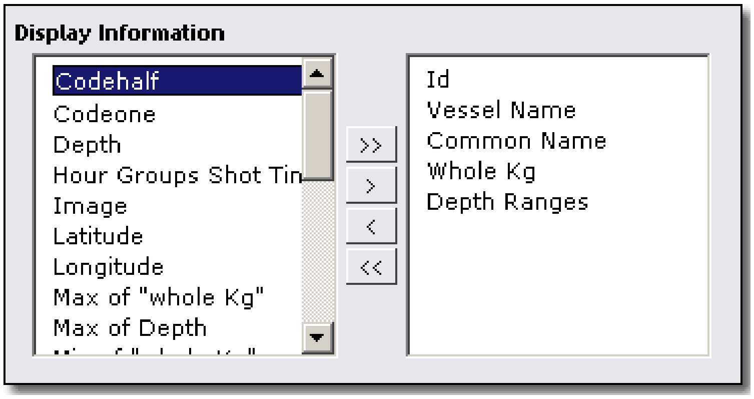
Data columns can be sent to the Mapping Viewer to provide further information about each point. The values contained in these columns displays in a pop-up window when you move your mouse over a point in the map.

➤ *To configure the Display Information section*

1. On the **Display Information** list box, select the columns to make available on the Mapping Viewer.

2. Select the data columns to display from the left hand list box and click the > button. *To remove a selection*, select the data column from the left hand list box and click the < button.

Note To select all the data columns click the >> button. To remove all sections click the << button.



Display Information

- Codehalf
- Codeone
- Depth
- Hour Groups Shot Tin
- Image
- Latitude
- Longitude
- Max of "whole Kg"
- Max of Depth

- Id
- Vessel Name
- Common Name
- Whole Kg
- Depth Ranges

Figure 39 Display Information section.

THEMES SECTION

The Theme section allows the selection of layer theme. Setting a theme involves color-coding or assigning images to points in the layer using the *Theme Builder Wizard*.

➤ *To view the Theme Builder Wizard*

1. Click . The *Theme Builder Wizard* displays.

Note The following theme types are available:

Single Shape Icon
This option allows you to specify one shape of one color to represent all your points.

Single Image Icon
This option allows you to specify a single image to represent all the points in the layer.

Multiple Shape Icon
This option allows you to select a shape and color code the shape according to the column value. For example selecting the circle shape to represent all the fishing boat points, then color coding the circles according to the name of the boat.

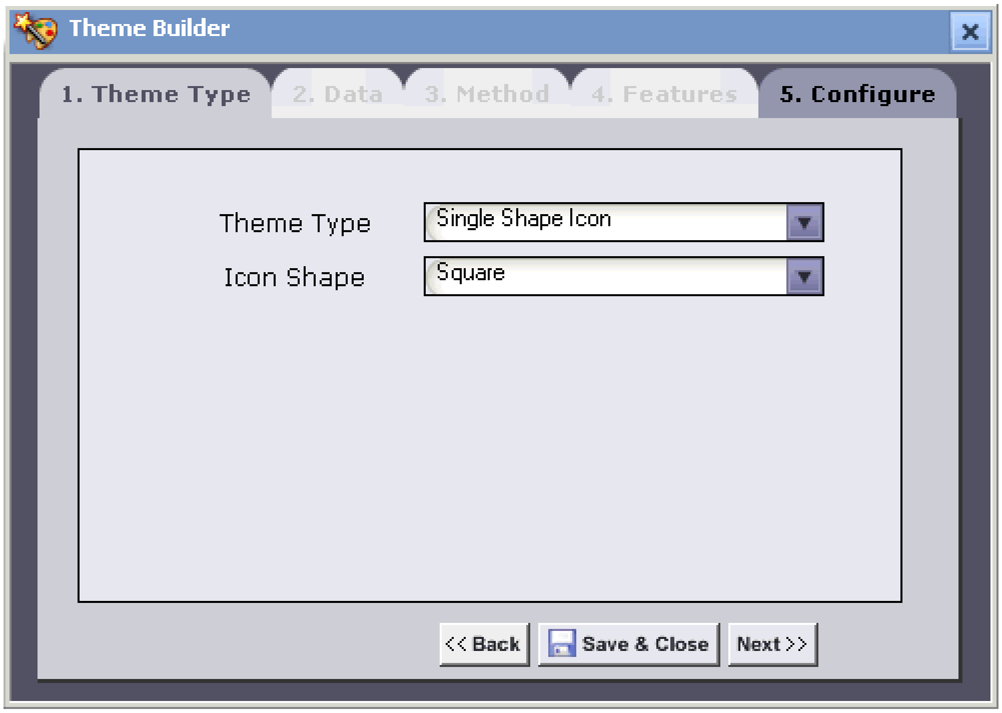
Multiple Image Icon
This option allows you to select a different image for each column value.

Auto Classification
This option allows you to specify the number of classes into which column values will be distributed.

➤ *Creating a Single Shape Icon Theme*

1. Click . The *Theme Builder Wizard* displays with the **Theme Type** tab open by default.
2. On the **Theme Type** drop-down list, select “Single Shape Icon”.

3. On the **Icon Shape** drop-down list, select the shape that you want to use to represent each point in the layer.



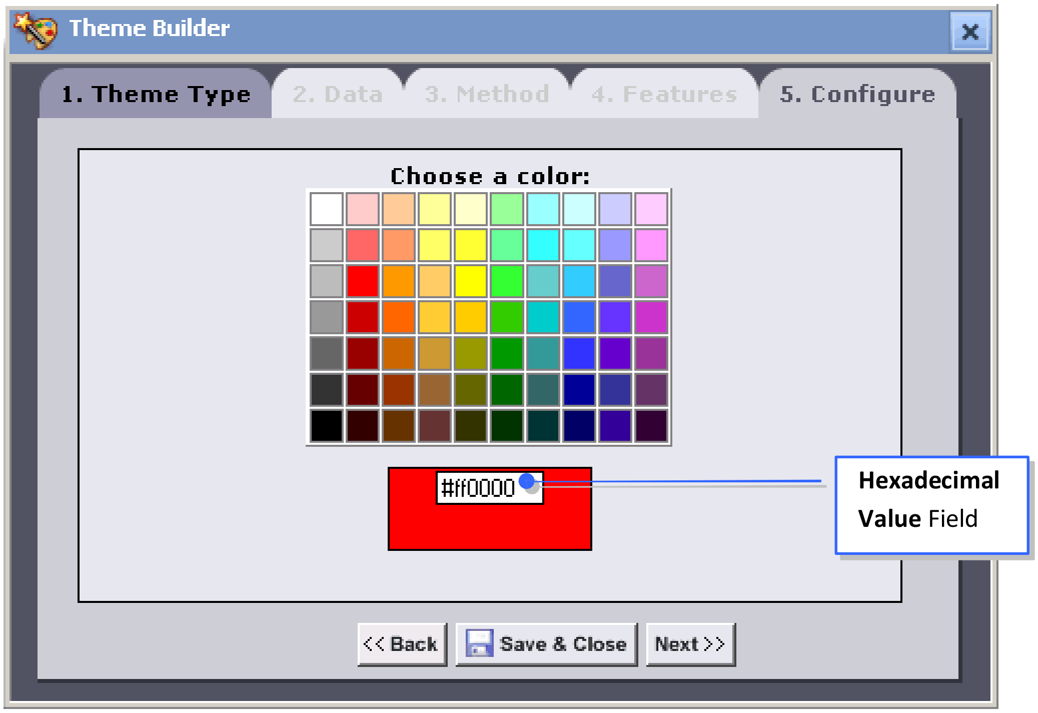
Theme Type: Single Shape Icon

Icon Shape: Square

Figure 40 Theme Builder Wizard – 1. Theme Type (Single Shape Icon). In this example the Square shape has been selected.

4. Click the **Configure** tab or the **Next** button. The **Configure** tab opens.

5. Select a color from the color swatch.



#ff0000

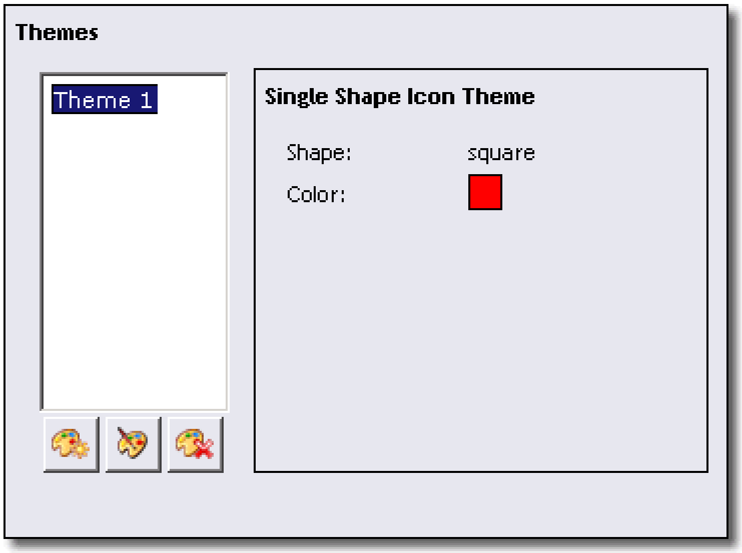
Hexadecimal Value Field

Figure 41 Theme Builder Wizard – 5. Configure. In this example the color red has been selected.

Tip

If the particular color you wish to use is not shown on the color swatch you can type the hexadecimal value directly into the text box below the color swatch.

6. Click Save & Close. The *Theme Builder Wizard* closes. An entry for the created theme displays on the Theme section of the *Point Layer* configuration screen.



Theme 1

Single Shape Icon Theme

Shape: square

Color: 🟥

Figure 42 Themes Section showing Single Shape Icon Theme 1. In this example we can see we selected a square shape and the color red.

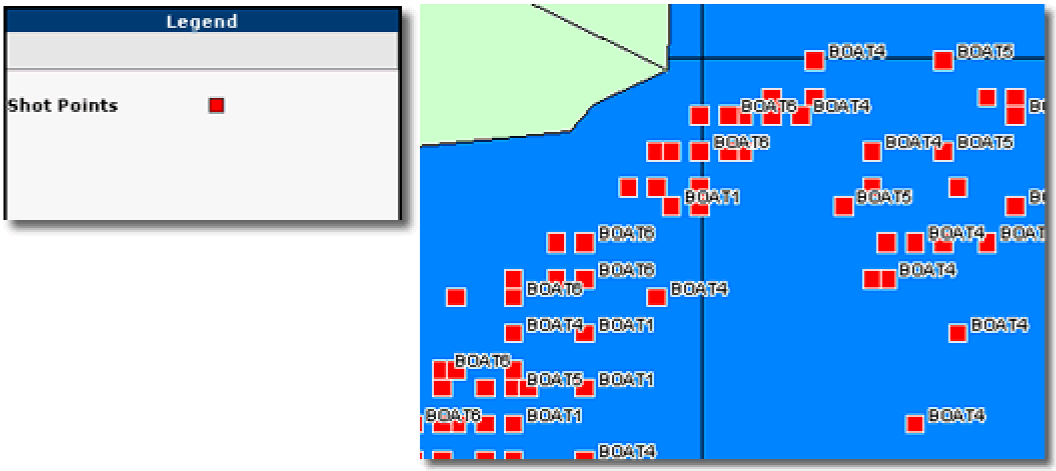


Figure 43 Map View and Legend showing the Single Shape Icon Theme, we can see here that all the Shot Points are themed as red squares.

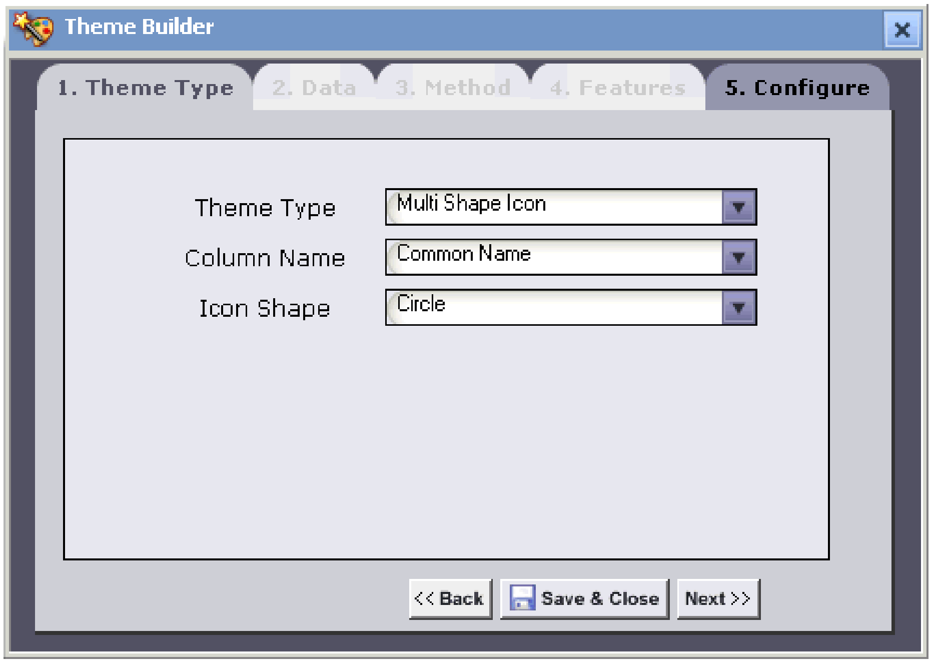
Creating a Multiple Shape Icon Theme

1. Click the . The *Theme Builder Wizard* displays with the **Theme Type** tab open by default.

2. On the **Theme Type** drop-down list, select “Multiple Shape Icon”.

3. On the **Column Name** drop-down list, select a column to configure (this list contains all selected data columns).

4. On the **Icon Shape** drop-down list, select the shape that you want to use to represent each point in the layer.



Theme Type: Multi Shape Icon

Column Name: Common Name

Icon Shape: Circle

Figure 62 Theme Builder Wizard – Theme Type Tab

5. Click the **Configure** tab or the **Next** button. The **Configure** tab opens.

6. Select a value from the value list box on the right.

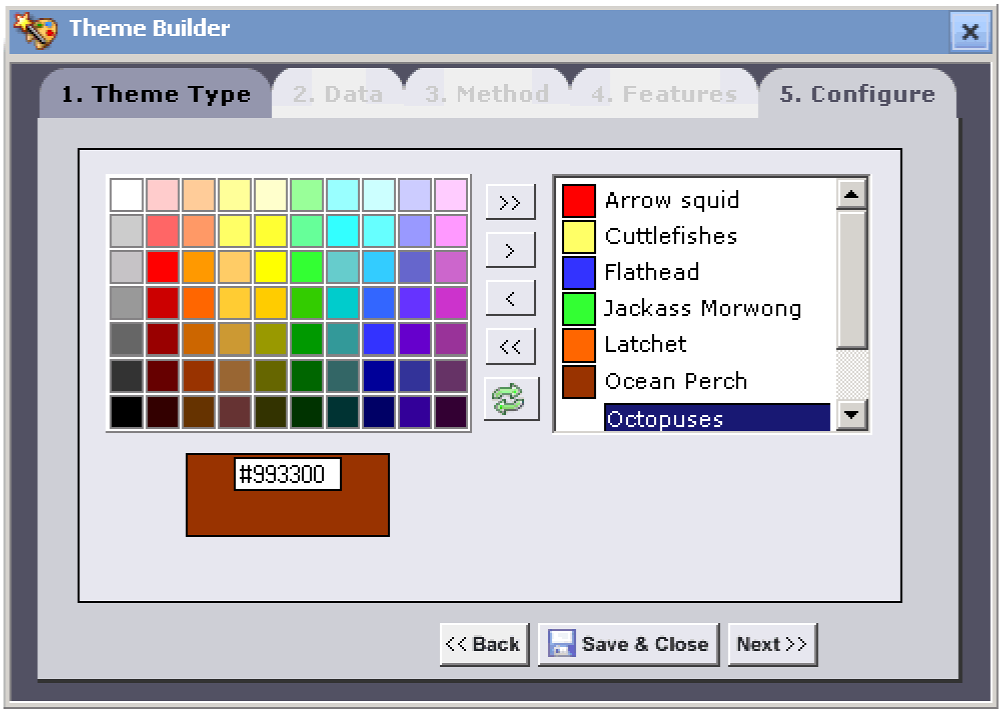
Note In some instances only a sub-set of values will be displayed in the value list box. Click 🔄 to display all values. Be aware that large datasets may take some time to process.

7. From the color swatch, click the color to represent the selected value. The chosen color displays next to the value in the value list.

Using the Selection Arrow Buttons

>	Associates a color randomly to the selected value.
>>	Associates colors randomly to the selected value and all values below the selected value.
<	Removes associated color from selected value.
<<	Removes all associated colors from all values.

Tip If a particular color to use is not shown on the color swatch, type the hexadecimal value directly into the field below the color swatch.



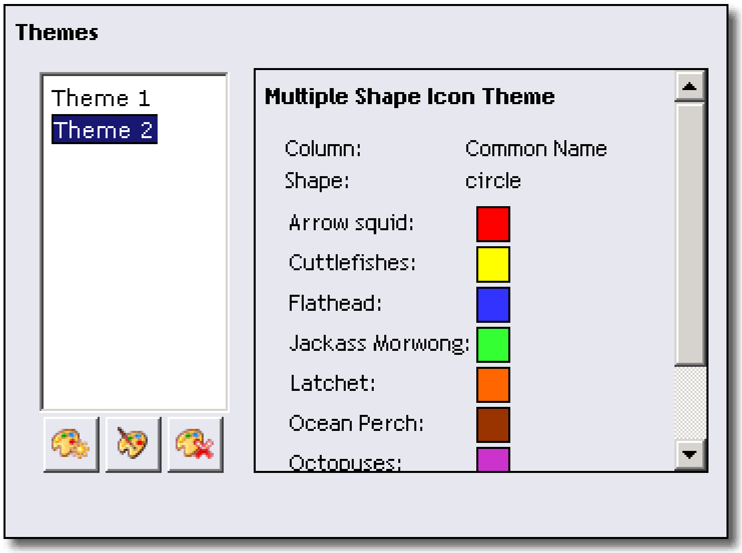
🟥 Arrow squid
🟨 Cuttlefishes
🟦 Flathead
🟩 Jackass Morwong
🟧 Latchet
🟫 Ocean Perch
Octopuses

#993300

Figure 44 Theme Builder Wizard – 5. Configure (Multiple Shapes).

8. Repeat the steps above if you want to assign themes to other columns.

9. Click Save & Close. The *Theme Builder Wizard* closes. The created theme displays on the Theme Section of the *Point Layer* configuration screen.



Themes

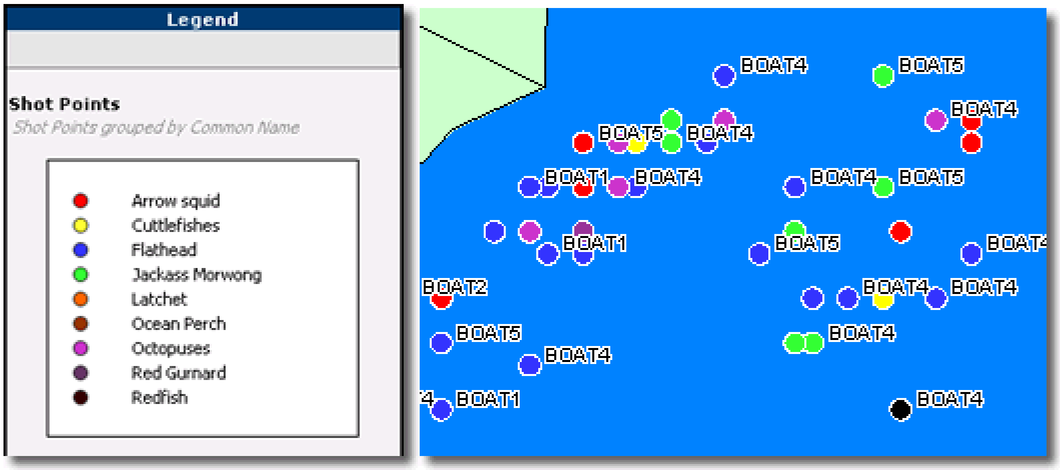
Theme 1
Theme 2

Multiple Shape Icon Theme

Column: Common Name
Shape: circle

Arrow squid:	🟥
Cuttlefishes:	🟨
Flathead:	🟦
Jackass Morwong:	🟩
Latchet:	🟧
Ocean Perch:	🟫
Octopuses:	🟪

Figure 45 Themes Section showing Multiple Shape Icon Theme (Theme 2).



Legend

Shot Points
Shot Points grouped by Common Name

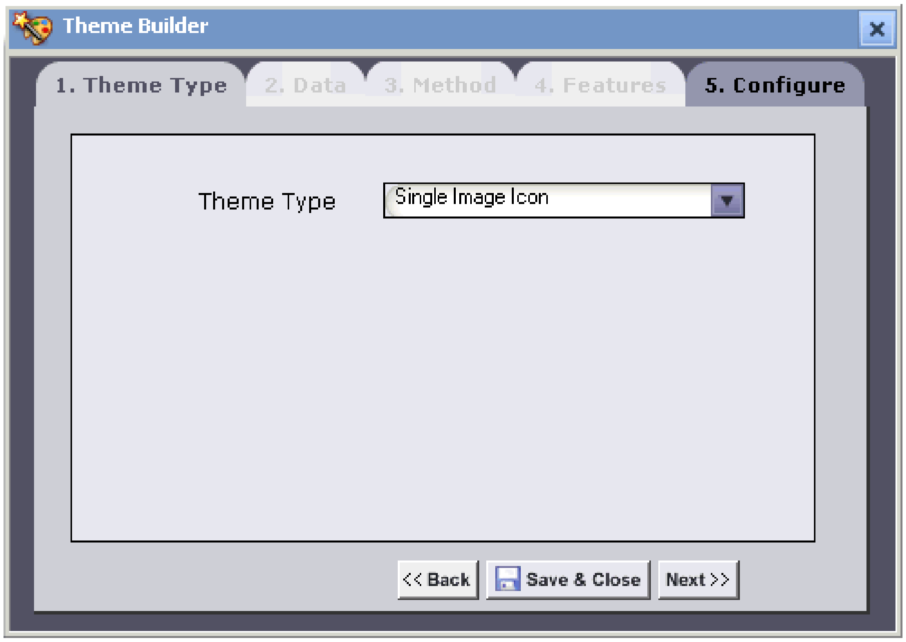
- ● Arrow squid
- ● Cuttlefishes
- ● Flathead
- ● Jackass Morwong
- ● Latchet
- ● Ocean Perch
- ● Octopuses
- ● Red Gurnard
- ● Redfish

Figure 46 Map View and Legend showing the Multiple Shape Icon Theme, we can see here that the Shot Points are themed according to the type of fish caught using the circle shape and the color assigned to each fish type (Common Name).

➢ *Creating a Single Image Icon Theme*

1. Click . The *Theme Builder Wizard* displays with the **Theme Type** tab open by default.

2. On the **Theme Type** drop-down list, select “Single Image Icon”.



Theme Type: Single Image Icon

Figure 47 Theme Builder Wizard – Theme Type (Single Image Icon).

3. Click the **Configure** tab or the **Next** button. The **Configure** tab opens.

4. Select an Image from the bottom images list box. A red square indicates the current selection.

Tip

Placing your cursor over an image will display the actual image size in the Preview box above.

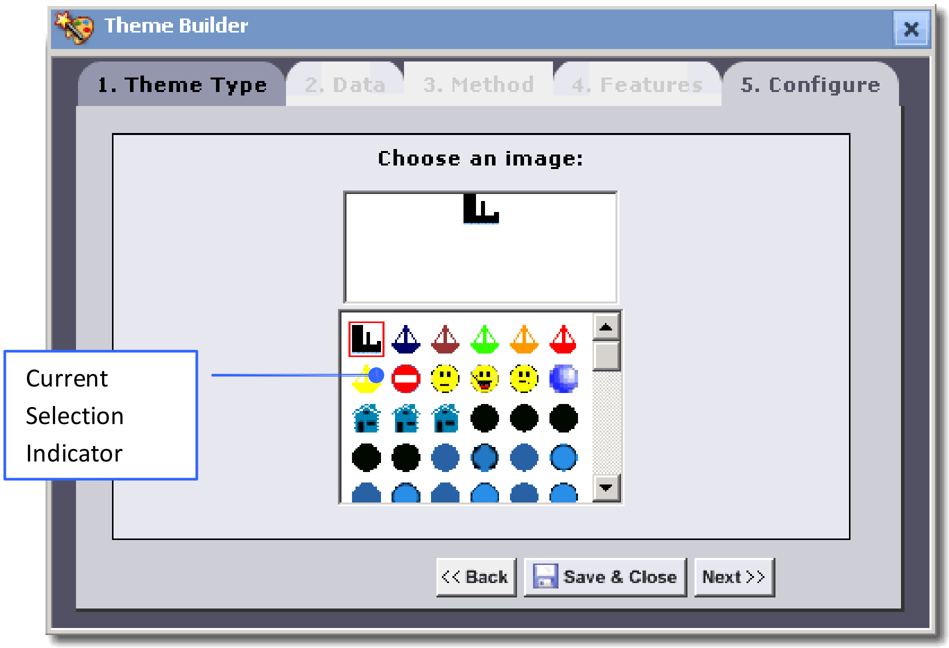


Figure 48. Theme Builder Wizard – 5. Configure (Single Image). In this example the image selected represents ocean platforms.

5. Click Save & Close. The *Theme Builder Wizard* closes. The created theme displays on the Theme Section of the *Point Layer* configuration screen.

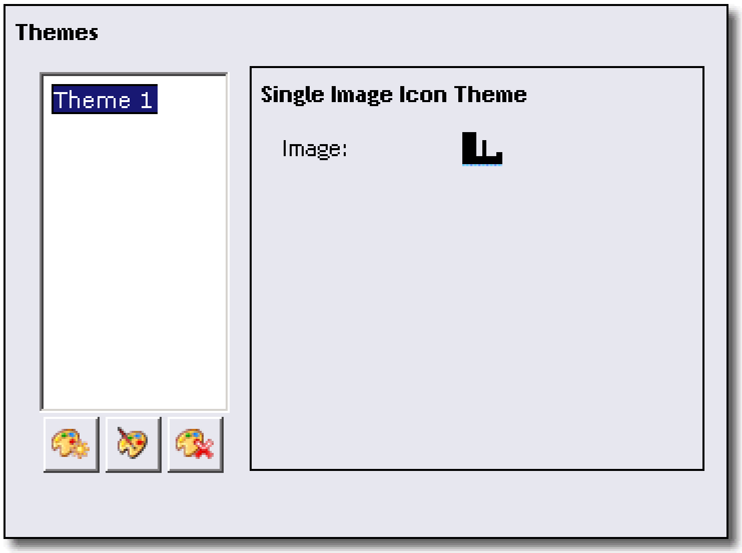


Figure 49. Themes Section showing Single Image Icon Theme (Theme 3).

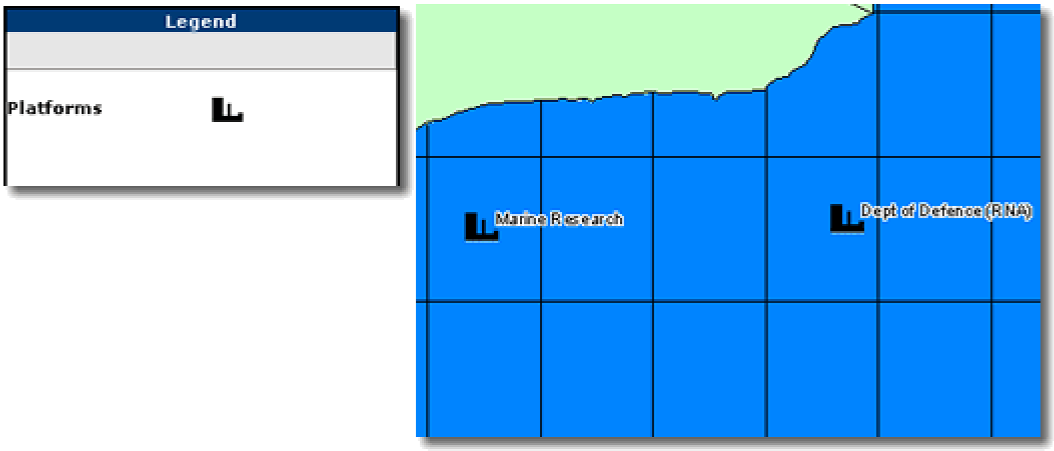


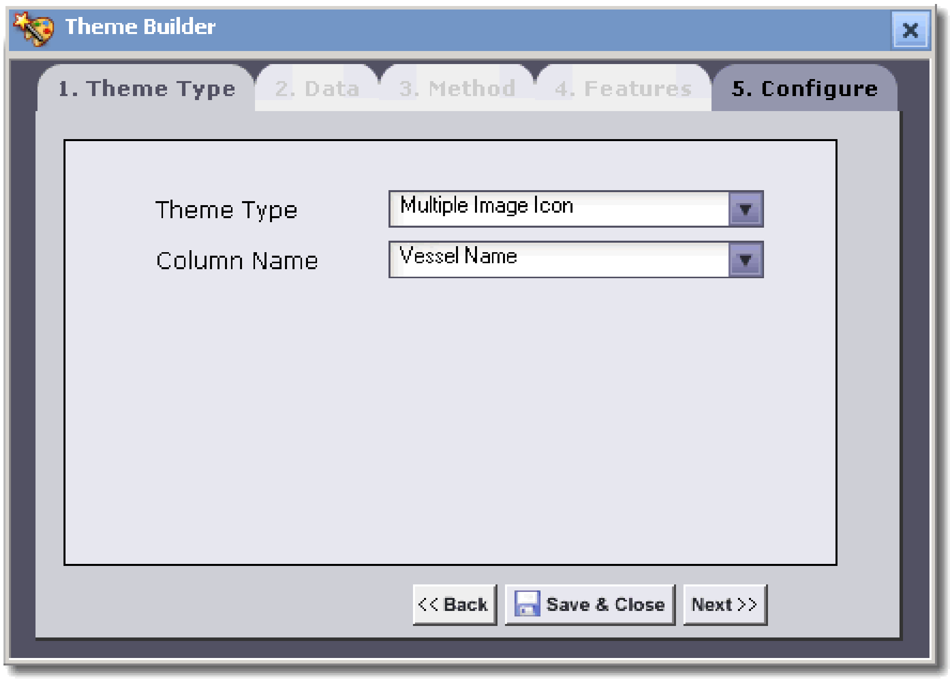
Figure 50. Map View and Legend showing the Single Image Icon Theme, we can see here the position of ocean platforms are themed using the platform image.

Creating a Multiple Image Icon Theme

1. Click . The *Theme Builder Wizard* displays with the **Theme Type** tab open by default.

2. On the **Theme Type** drop-down list, select “Multiple Image Icon”.

3. On the **Column Name** drop-down list, select a column to configure (this list contains all selected data columns).



Theme Type: Multiple Image Icon

Column Name: Vessel Name

Figure 51. Theme Builder Wizard – 1. Theme Type (Multiple Image Icon).

4. Click the **Configure** tab or the **Next** button. The **Configure** tab opens.

5. Select a value from the value list box on the right.

Note

In some instances only a sub-set of values will be displayed in the value list box. Click ⟳ to display all values. Be aware that large datasets may take some time to process.

6. Select an image from the Image list box on the left and click the > button. The chosen image displays next to the value in the value list.

Using the Selection Arrow Button

>	Select a value and an image then click this button to associate the image with the value. Repeated clicks of this button will automatically select the next image from left to right.
>>	Select a value and an image then click this button to automatically associate all values with an image. All values below the selected value will be automatically associated with images, starting with the selected image followed by the next image from left to right.
<	Removes associated image from selected value.
<<	Removes all associated images from all values.

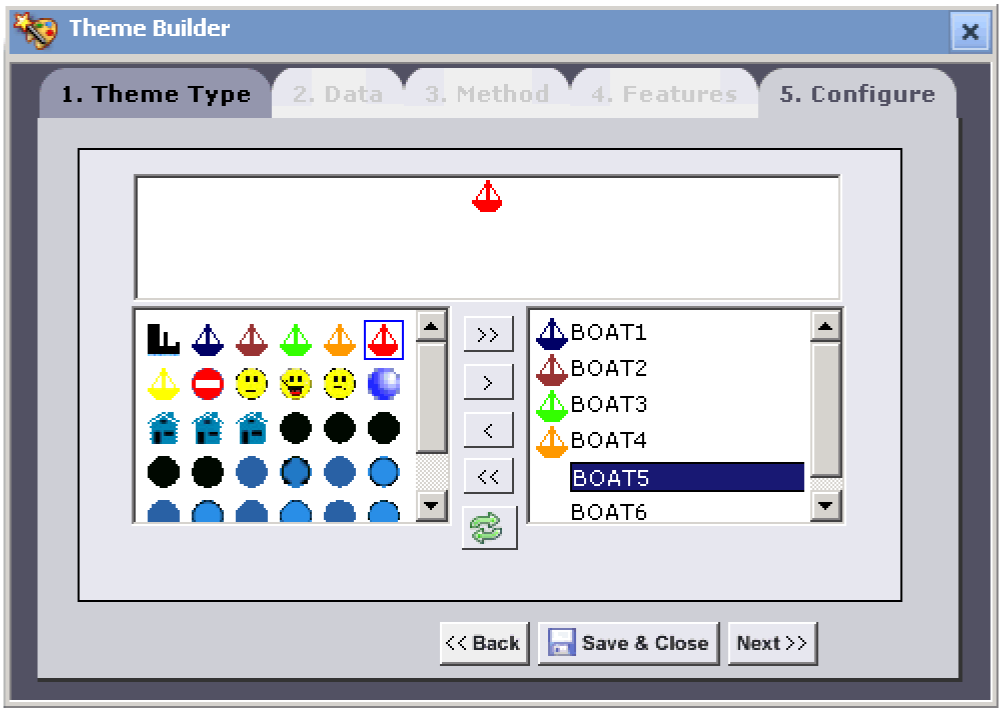


Figure 52. Theme Builder Wizard – 5. Configure (Multiple Image).

Note: An icon may not be assigned for every single column value. *Map Intelligence* automatically assigns a default icon for all values that have not been configured.

7. Repeat the steps above if you want to assign themes to other columns.

8. Click Save & Close. The *Theme Builder Wizard* closes. The created theme displays on the Theme Section of the *Point Layer* configuration screen.

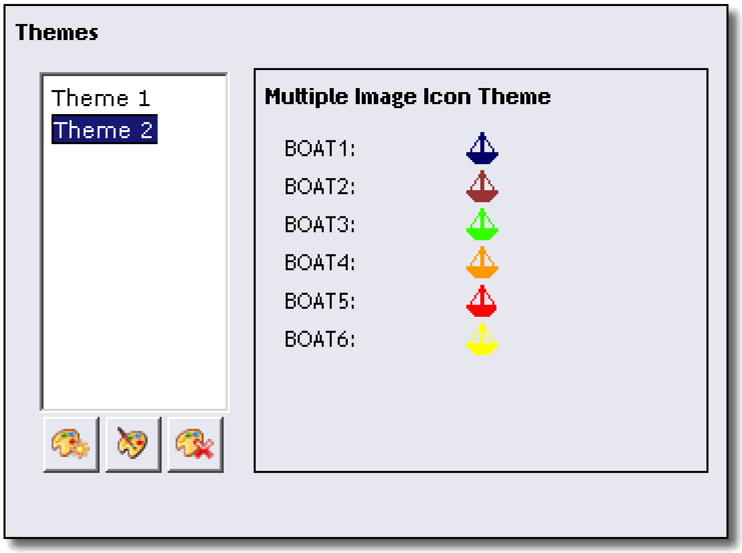
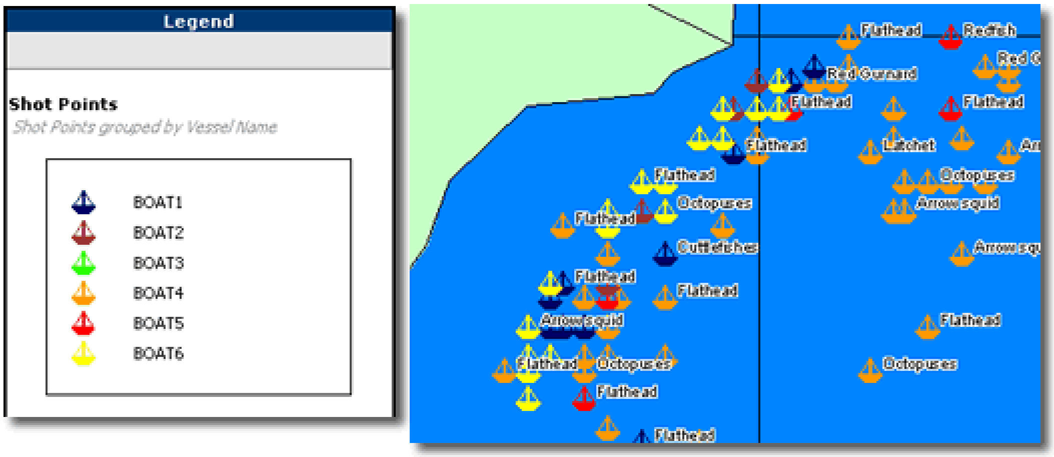


Figure 53. Themes Section showing Multiple Image Icon Theme (Theme 2).



Legend

Shot Points

Shot Points grouped by Vessel Name

▲	BOAT1
▲	BOAT2
▲	BOAT3
▲	BOAT4
▲	BOAT5
▲	BOAT6

Figure 54. Map View and Legend showing the Multiple Image Icon Theme, we can see here that the Shot Points are themed according to the Vessel Name, for example all yellow boats are BOAT 6.

Creating an Auto Classification Theme

1. Click . The *Theme Builder Wizard* displays with the **Theme Type** tab open by default.

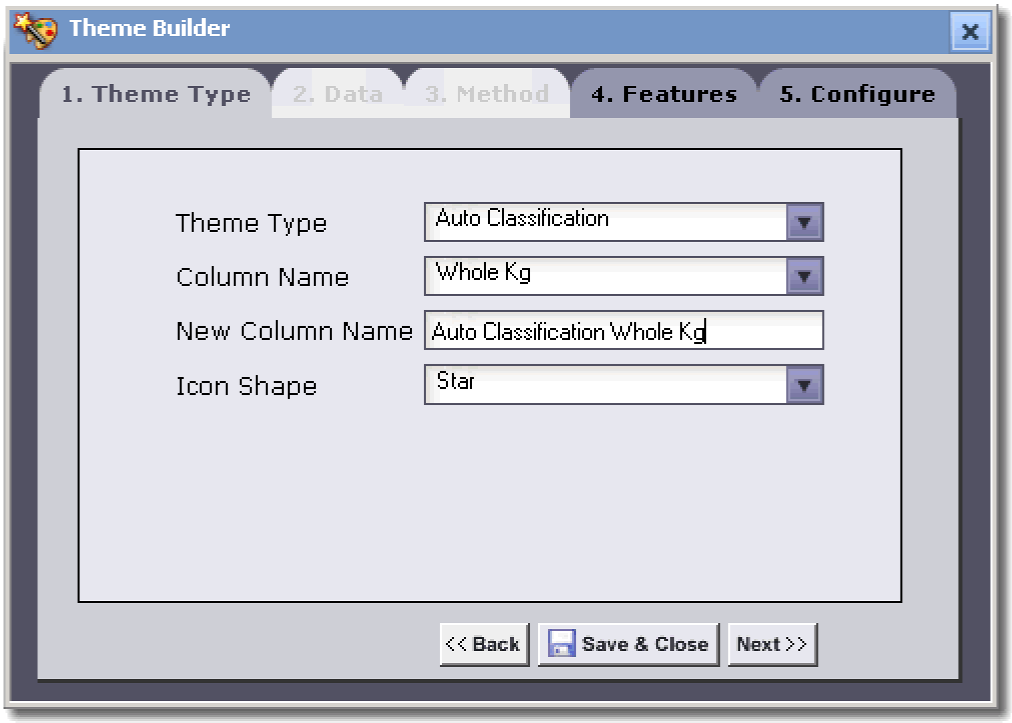
2. On the **Theme Type** drop-down list, select “Auto Classification”.

3. On the **Column Name** drop-down list, select a column to configure (this list contains all numeric data columns).

4. On the **New Column Name** field, type a new column name (This column is used to store the classified values).

Note The column name must be unique.

5. On the **Icon Shape** drop-down list, select the shape to represent each point in the layer.



Theme Type: Auto Classification
Column Name: Whole Kg
New Column Name: Auto Classification Whole Kg
Icon Shape: Star

Figure 55. Theme Builder Wizard – 1. Theme Type (Auto Classification).

6. Click the **Features** tab or the **Next** button. The **Features** tab opens.

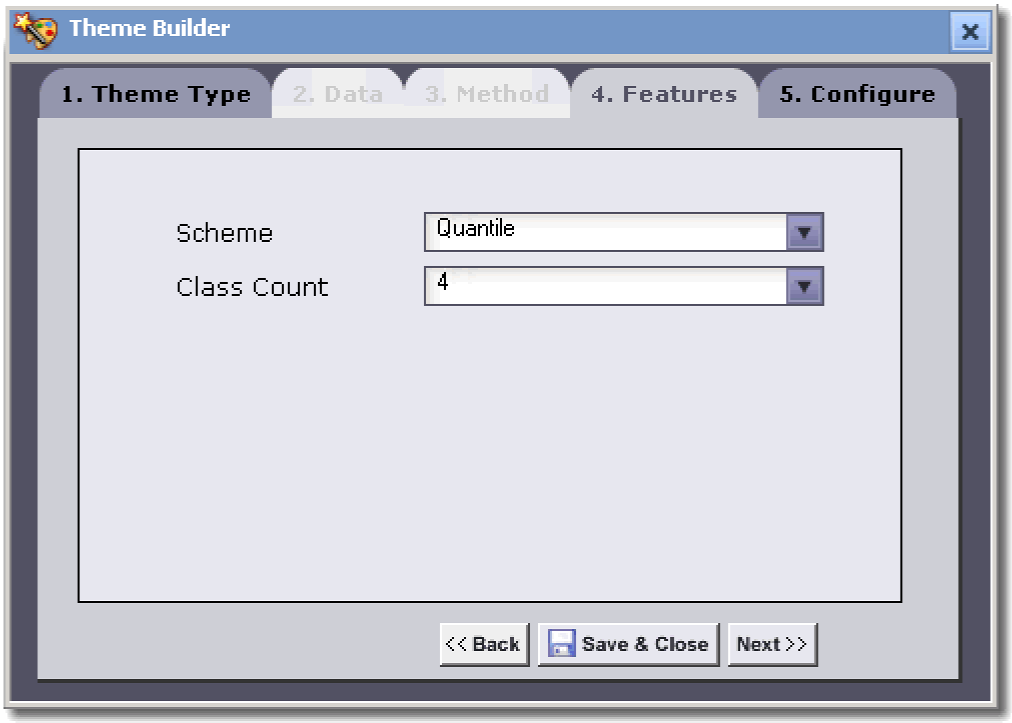
7. On the **Scheme** drop-down list, select a classification scheme.

Note

You can use a standard classification scheme to group similar values to look for patterns in the data. You can choose from two schemes for grouping data values into classes based on how the data values are distributed.

- **Equal Interval**: The difference between the high and low values is the same for every class. So, the classification of the data will be based on a set of equal splits. For example, if the lowest value is 0 and the highest value is 10 in the data, and 5 classes are requested, the range of each class will be 0 to 2, 2 to 4, 4 to 6, 6 to 8, 8 to 10.
- **Quantile**: Each class contains an equal number of features. In this case, the points are sorted in ascending order (for the chosen data field) and each class is filled with (total number of points)/(number of classes) points starting from the lowest value to the highest.

8. On the **Class Count** drop-down list, select the number of colors to appear on the shading range.



Scheme: Quantile

Class Count: 4

Figure 56. Theme Builder Wizard – 1. Theme Type (Auto Classification).

9. Click the **Configure** tab or the **Next** button. The **Configure** tab opens.

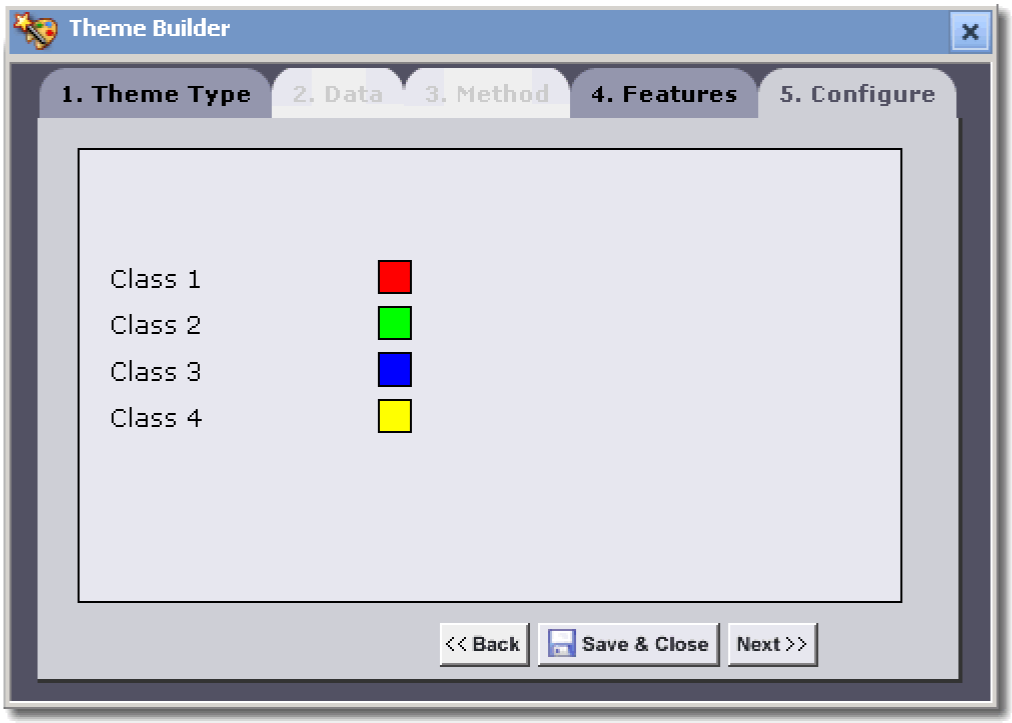
10. Click the **Class 1** colored rectangle.

11. Select a color from the color picker.

12. Repeat the above steps for each class.

Note The colored rectangles will change to the new color after each selection.

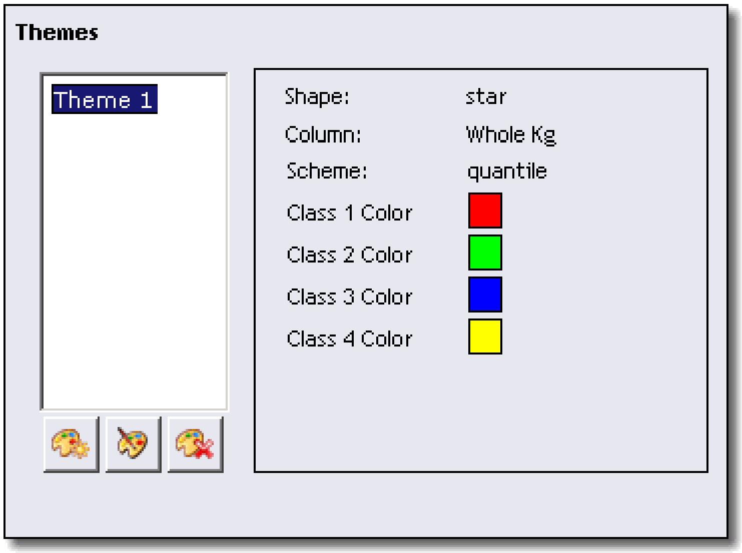
Tip If the color picker does not reflect the preferred color, type the hexadecimal value instead.



Class 1 🟥
Class 2 🟩
Class 3 🟦
Class 4 🟨

Figure 57. Theme Builder Wizard: Configure Tab (Auto Classification).

13. Click Save & Close. The *Theme Builder Wizard* closes. The created theme displays on the Color Theme section of the *Relationship Layer* configuration screen.



Shape:	star
Column:	Whole Kg
Scheme:	quantile
Class 1 Color	🟥
Class 2 Color	🟩
Class 3 Color	🟦
Class 4 Color	🟨

Figure758. Themes Section showing Auto Classification Theme.

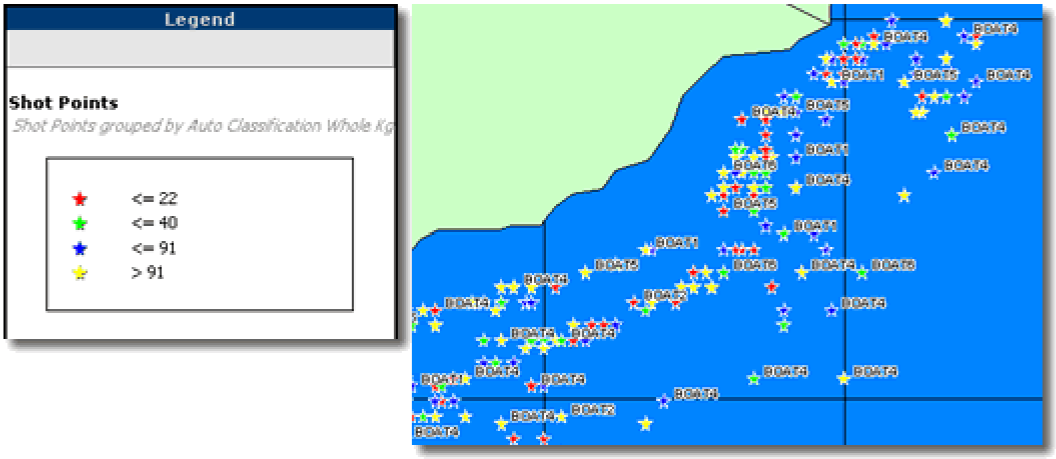


Figure 59. Map View and Legend showing the Auto Classification Theme, we can see here that the Shot Points are themed according to the Whole Kg range they fall into, for example all shot points with a catch less than 22 Kg are shown with a red star.

DEFAULT THEME

The *default theme* is the theme that is first used when the Mapping Viewer is initially accessed. This is the most recently created theme.

To edit a theme

1. Select the theme from the theme list then and click . The *Theme Builder Wizard* displays.

2. Do the necessary changes and click Save & Close. The wizard closes.

To delete a theme

1. Select the theme from the theme list then and click

This completes all the theme options available for point layers.

TO TEST YOUR SETTINGS

➢ ***To test the Point Layer configuration***

1. On the **Main Menu**, click Test. A browser opens displaying the layer configuration. Note that tested layers are automatically added on the layer list in Layer Directory.

SAVING THE LAYER

➢ ***To save the Point Layer configuration***

1. On the **Main Menu**, click Save to save layer settings. Note that saved layers are automatically added on the layer list in the Layer Directory.

Note Clicking the **Save** button saves the changes to all the configuration screens.

EDITING A LAYER

➢ ***To edit a Point Layer configuration***

1. On the **Layer Directory**, click expand **Point Layers** folder to view the layer list.

2. Click the **Point Layer** to edit. The *Point Layer* configuration screen displays for editing.

3. Do the necessary changes.

4. On the Main Menu, click Save.

Note Clicking the **Save** button saves all the changes made to all configuration screens.

COPYING A LAYER

➢ ***To copy a Point Layer***

1. On the Layer Directory, expand **Point Layers** folder to view the layer list.

2. Click the **Point Layer** to copy. The *Point Layer* configuration screen opens.

3. On the **Main Menu**, click Copy. The page displays to show the copied layer properties.

4. On the **Layer Name** field, type a new name for the layer.

5. Click Save. The created layer displays in the Layer Directory.

Note Clicking the **Save** button saves all the changes made to all configuration screens.

DELETING A LAYER

➢ ***To delete a Point Layer***

1. On the **Layer Directory**, expand **Point Layers** folder to view the layer list.

2. Click the **Point Layer** to delete. The *Point Layer* configuration screen opens.

3. On the **Main Menu**, click Delete.

4. On the Main Menu, click Save.

Note Clicking the **Save** button saves all the changes made to all configuration screens.
Note on Data Format
Map Intelligence, by default, places commas in numbers greater than 999. The format can be change by specifying the column format in the universe. This only applies to columns with numeric values.

CONFIGURE RELATIONSHIP LAYERS

For a description of Relationship Layers, see Concepts – Layer Types – Relationship Layers

➢ ***To open the Relationship Layer configuration screen***

1. Click **Relationship Layers**. The *Relationship Layer* configuration screen displays.

2. Click New. The fields are cleared for new input.

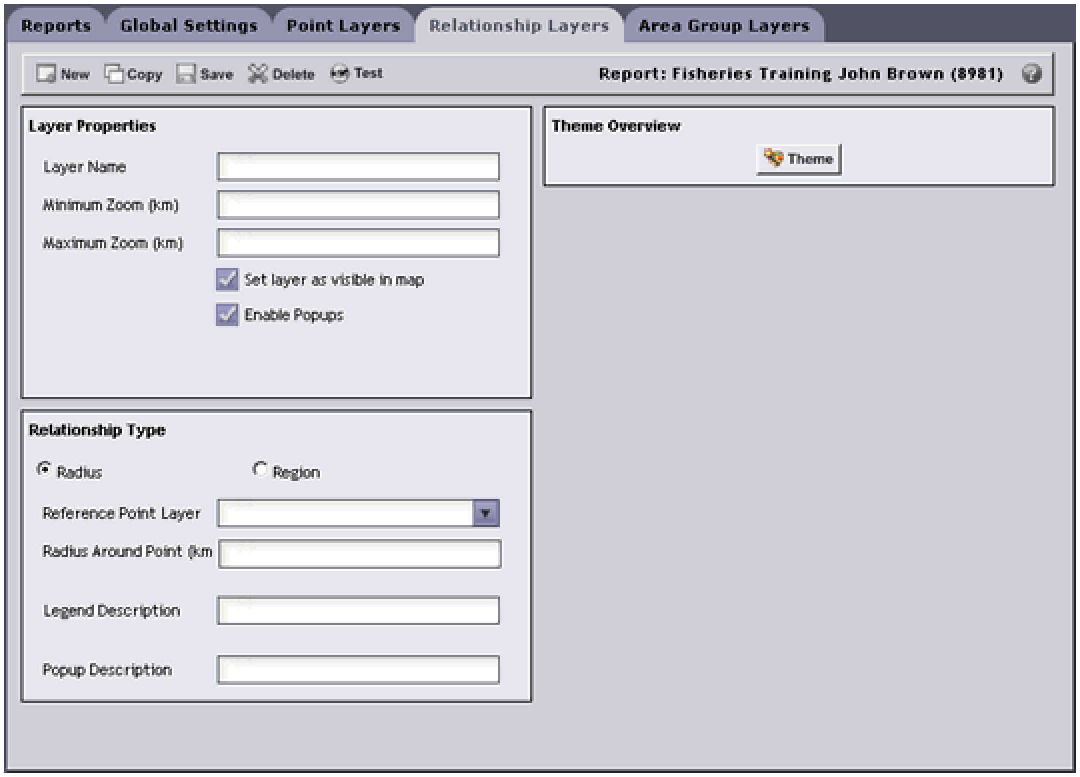


Figure 60. Relationship Layer configuration screen.

LAYER PROPERTIES SECTION

➤ ***To configure the Layer Properties section***

1. On the **Layer Name** field, type a title for the layer.

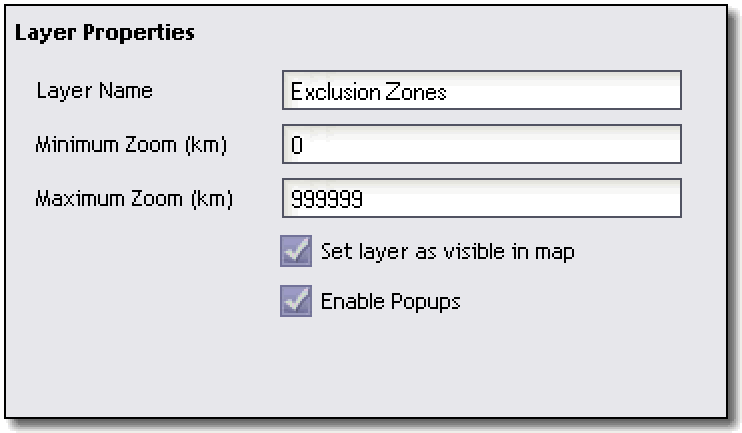
Note Spaces can be used, but must not be used at the beginning or end of the layer name. For Map Intelligence Servers 3.1 or below, only letters, numbers and spaces may be used.

2. Specify a range in which the layer will be visible on the map by entering a **Minimum Zoom** and **Maximum Zoom** value. The layer will only be visible if the current map width is within the specified minimum and maximum values.

3. Select the **Set Layer as Visible in Map** checkbox to make the layer visible on initial access of the Mapping Viewer.

4. Select the **Enable Popups** checkbox to enable information pop-ups on initial access the Mapping Viewer.

Note *Information Pop-ups* provide further information about a region on the map.



Layer Properties

Layer Name: Exclusion Zones

Minimum Zoom (km): 0

Maximum Zoom (km): 999999

☑ Set layer as visible in map

☑ Enable Popups

Figure 61. Layer Properties section.

RELATIONSHIP TYPE SECTION

The Relationship Type section allows you to specify the type of relationship to display on the map.

- The “Radius” option displays the relationship between two (2) Point layers as color-coded or hatched circles around a particular point.

- The "Region" option displays the relationship between a Point layer and a built-in map layer as color-coded or hatched regions on the map layer.

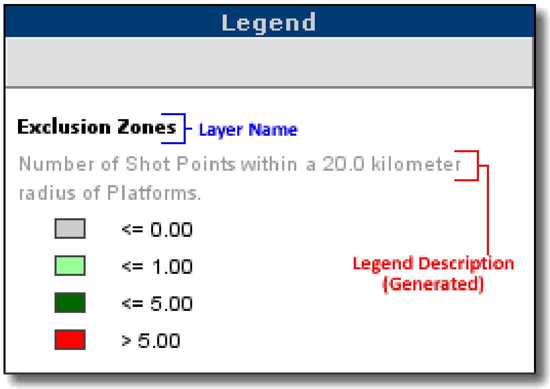
➢ *Selecting the Radius option*

1. Select the **Radius** radio button.

2. On the **Reference Point Layer** drop-down list, select the point layer to base the relationship on. Points in this layer become the center point of the shaded circles.

3. On the **Radius Around Point** field, type the radius of the circle to display on the map.

4. On the **Legend Description** field, type a description to use for the legend of this layer. If this field is left blank, *Map Intelligence* automatically assigns a description.



Legend

Exclusion Zones

Number of Shot Points within a 20.0 kilometer radius of Platforms.

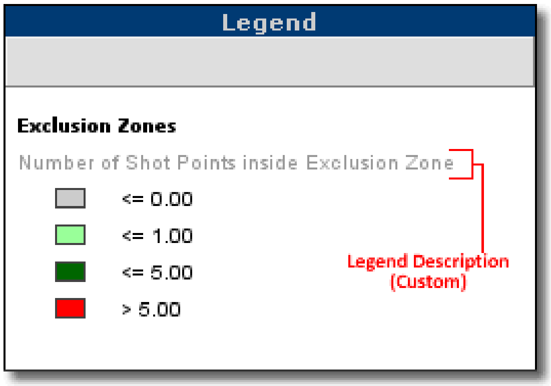
⬜ <= 0.00

🟩 <= 1.00

🟩 <= 5.00

🟥 > 5.00

Figure 62. Legend showing a Map Intelligence generated description.



Legend

Exclusion Zones

Number of Shot Points inside Exclusion Zone

⬜ <= 0.00

🟩 <= 1.00

🟩 <= 5.00

🟥 > 5.00

Figure 63. Legend showing a customized description

5. On the **Popup Description** field, type a description to use for the information pop-ups of this layer. The *Popup Description* describes each region of the layer and may contain any of the following parameters.

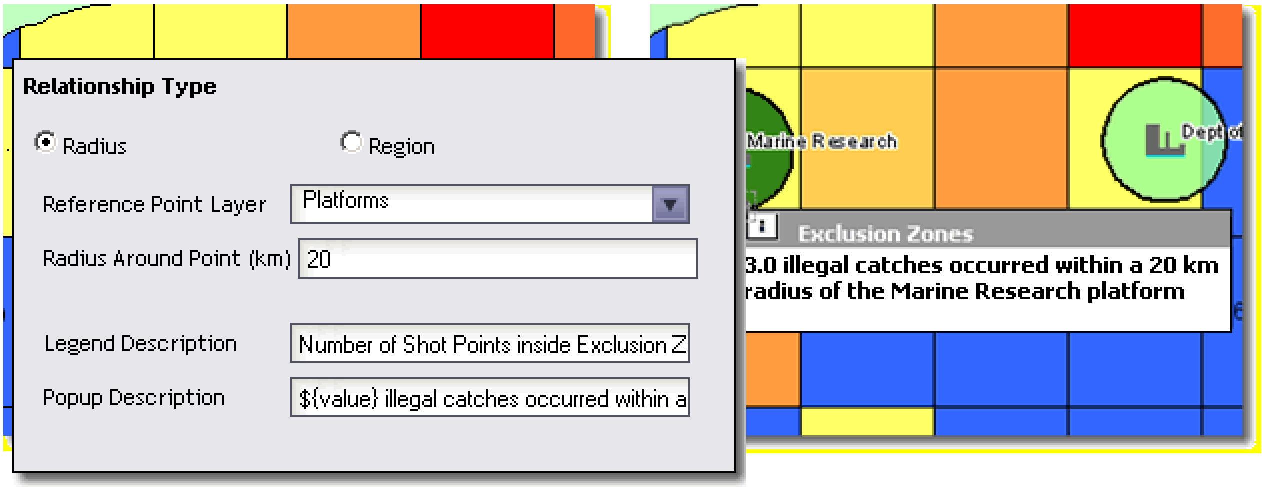
${label}	Will be replaced with the label for the region.
${value}	Will be replaced with the value for the region determined by the column selected in the theme (see Creating Themes for Relationship Layers).
Example	${value} items in ${label}

If this field is left blank a description will be generated by Map Intelligence.

Figure 64. Information popup displaying a Map Intelligence generated Popup description

Figure 65. Customized Popup description. In this example the following description was entered into the Popup Description text box.

${value} illegal catches occurred within a 20 km radius of the ${label} platform



Relationship Type

● Radius ○ Region

Reference Point Layer: Platforms

Radius Around Point (km): 20

Legend Description: Number of Shot Points inside Exclusion Z

Popup Description: ${value} illegal catches occurred within a

Exclusion Zones

3.0 illegal catches occurred within a 20 km radius of the Marine Research platform

Figure 66. Relationship Type – Radius Option

Selecting the Region option

1. Select the **Region** radio button.

2. On the **Reference Region Layer** drop-down list, select the built in map layer to shade.

Note

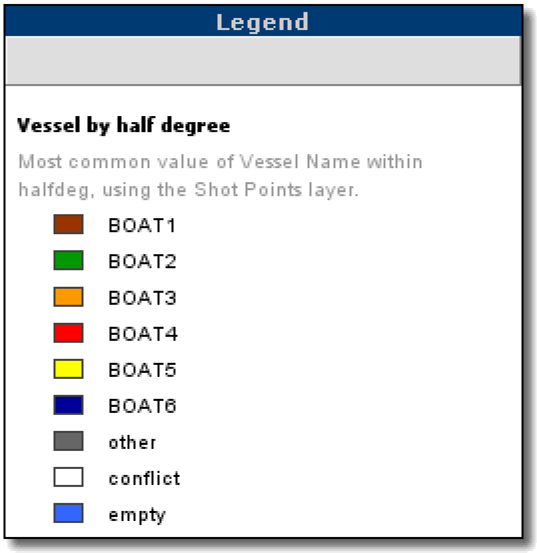
- To refresh the **Reference Region Layer** drop-down list, click 🔄.
- Only layers containing regions can be used as reference layers.
- Built-in layers are arranged in a particular order on the map. When selecting a built-in layer to shade, all map layers that sit under the selected layer are covered by the selected color or hatch.

3. On the **Label Column** drop-down list, select the column in the map layer that contains the values to be used as labels for the regions.

Note

Map Intelligence IGP users: Labels will not be visible if the server setting *Show Region Built-in Label* has been set to *No*. Refer to the *Settings* section of the *Map Intelligence Server Tools and Administration Guide*

4. On the **Legend Description** field, type a description to use for the legend of this layer. If this field is left blank, *Map Intelligence* automatically assigns a description.



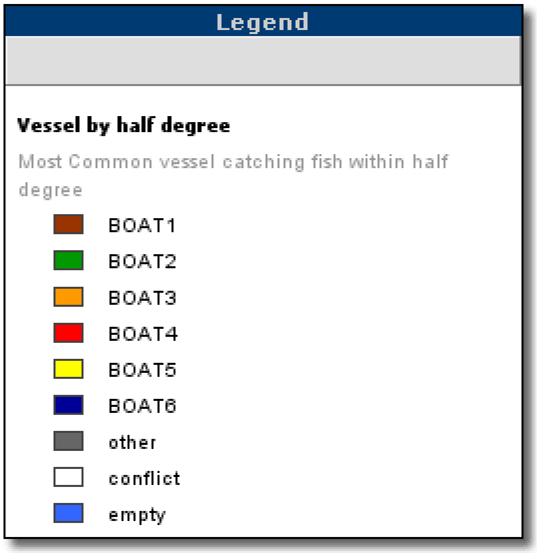
Legend

Vessel by half degree

Most common value of Vessel Name within halfdeg, using the Shot Points layer.

🟫	BOAT1
🟩	BOAT2
🟧	BOAT3
🟥	BOAT4
🟨	BOAT5
🟦	BOAT6
⬛	other
⬜	conflict
🟦	empty

Figure 67. Legend showing a generated description.



Legend

Vessel by half degree

Most Common vessel catching fish within half degree

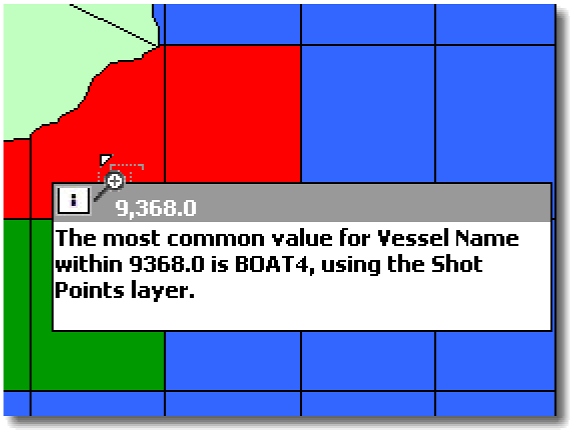
🟫	BOAT1
🟩	BOAT2
🟧	BOAT3
🟥	BOAT4
🟨	BOAT5
🟦	BOAT6
⬛	other
⬜	conflict
🟦	empty

Figure 68. Legend showing a customized description.

5. On the **Popup Description** field, type a description to use for information pop-ups of this layer. The *Popup Description* describes each region of the layer and may contain any of the following parameters:

${label}	Will be replaced with the label for the region.
${value}	Will be replaced with the value for the region determined by the column selected in the theme (see Figure 71).
Example	${value} items in ${label}

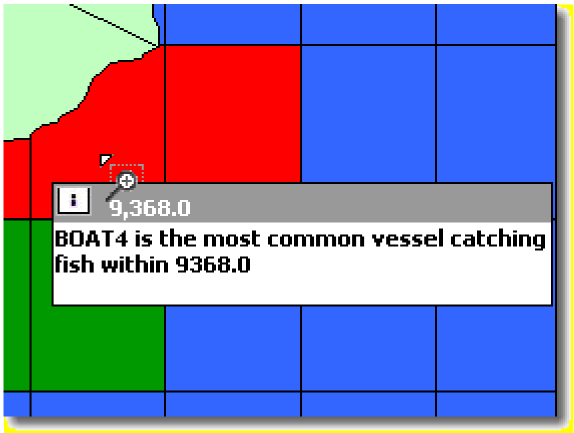
If this field is left blank a description will be generated by Map Intelligence.



9,368.0

The most common value for Vessel Name within 9368.0 is BOAT4, using the Shot Points layer.

Figure 69. Information popup displaying a Map Intelligence generated Popup description

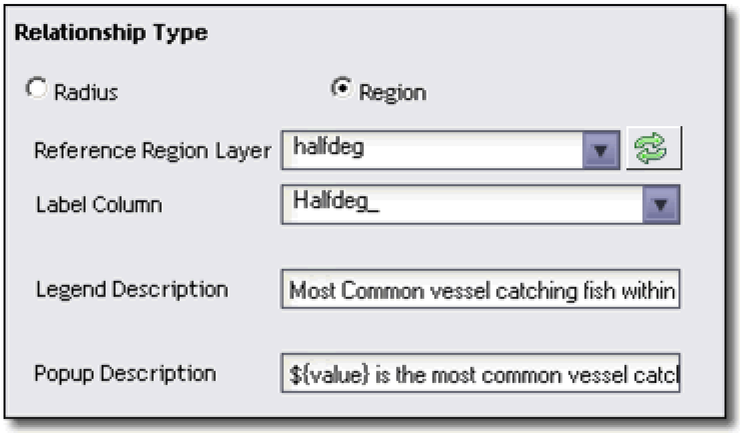


9,368.0

BOAT4 is the most common vessel catching fish within 9368.0

Figure 70. Customized Popup description. In this example the following description was entered into the Popup Description text box.

${value} is the most common vessel catching fish within ${label}



Relationship Type

○ Radius ● Region

Reference Region Layer: halfdeg

Label Column: Halfdeg_

Legend Description: Most Common vessel catching fish within

Popup Description: ${value} is the most common vessel catc

Figure 71. Relationship Type – Region Option

CREATING THEMES FOR RELATIONSHIP LAYERS

Creating themes for Relationship Layers requires you to specify threshold conditions based on a Numeric or String aggregation using the *Theme Builder Wizard* on the Relationship Layer configuration screens.

Note Hatches for *Radius Relationship* layers are not available for the current version of *Map Intelligence*.

NUMERIC AGGREGATION

Map Intelligence allows the application of function on values from a specified column. The specified built-in map layer or a circle around a point is shaded according to the resulting values. The available numeric functions are: *Count*, *Sum*, *Min*, *Max*, *Mean* and *Median*.

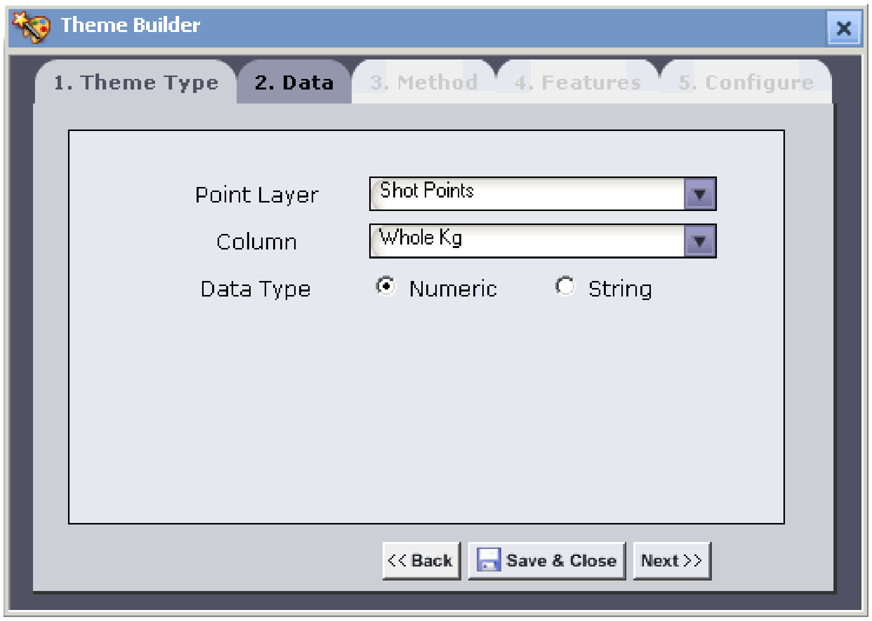
➢ ***Creating a theme based on a Numeric Aggregation***

1. Click Theme. The *Theme Builder Wizard* displays with the **Theme Type** tab open by default.

2. On the **Point Layer** drop down list, select the Point Layer containing the points to geographically relate to the reference layer.

3. On the **Column** drop down list, select the column to use to paint the regions. The data for this column are extracted from the points and aggregated according to the geographical group of the points.

4. Select the **Numeric** radio button.



Point Layer: Shot Points

Column: Whole Kg

Data Type: ● Numeric ○ String

Figure 72. Theme Builder Wizard: Theme Type Tab (Numeric).

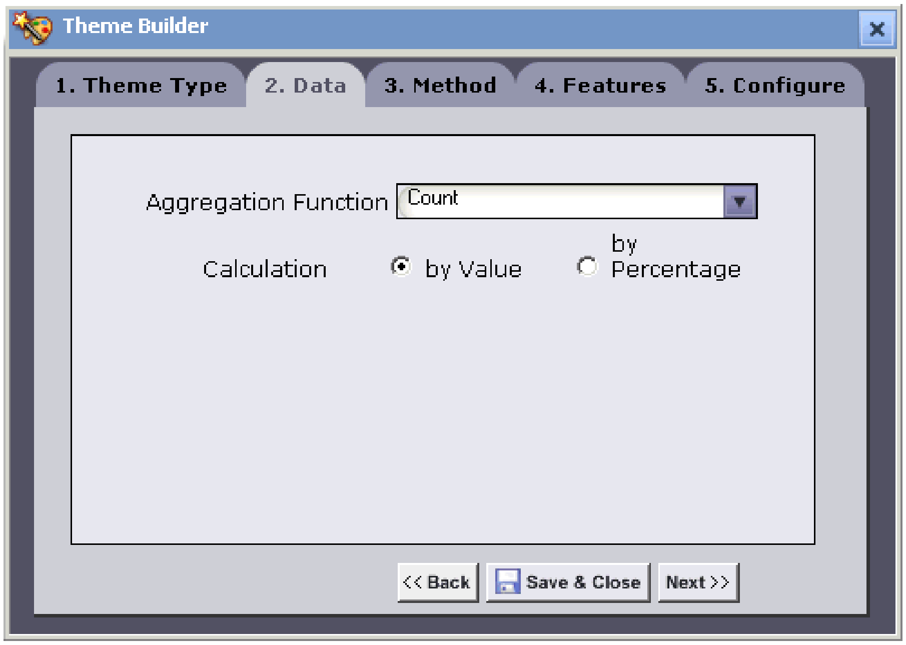
5. Click the **Data** tab or the **Next** button. The **Data** tab opens.

6. On the **Aggregation Function** drop-down list, select the function to use for the layer: “Count”, “Sum”, “Min”, “Max”, “Mean” and “Median”.

7. On the **Calculation** option, click either the by **Value** or by **Percentage** radio button.

Note

- The aggregates can be used as the raw aggregate value or as a percentage of the total aggregate over the point layer.
- Note that only one color and one hatch layer can be displayed simultaneously for a particular built-in-layer. If you have multiple layers that use the same built-in layer, you can switch between these using the Theme Select option from the Mapping Viewer (refer to the *Map Intelligence Mapping Viewer User Manual*



Aggregation Function: Count

Calculation ● by Value ○ by Percentage

Figure 73. Theme Builder Wizard: Data Tab (Numeric).

8. Click the **Method** tab or the **Next** button. The **Method** tab opens.

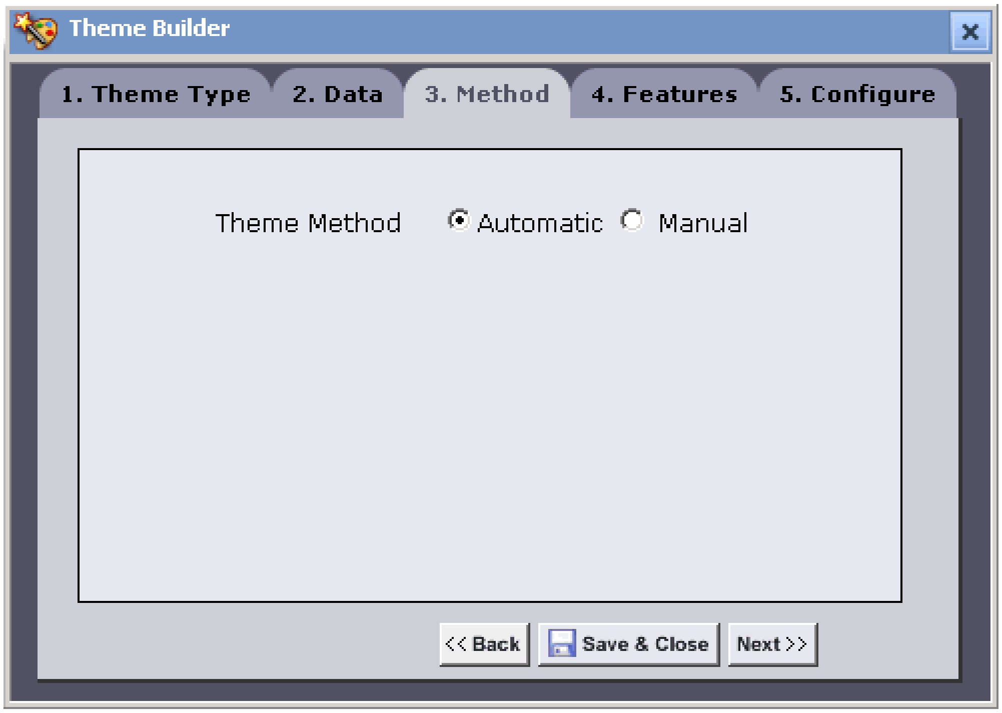
Note

There are two (2) methods for applying themes:

- Automatic
- Manual

AUTOMATIC METHOD

1. On the **Theme Method** options, click the **Automatic** radio button.



Theme Method ● Automatic ○ Manual

Figure 74. Theme Builder Wizard: Method Tab (Numeric- Automatic).

2. Click the **Features** tab or the **Next** button. The **Features** tab opens.

3. On the **Scheme** drop-down list, select a classification scheme.

Note

A standard classification scheme may be used to group similar values to look for patterns in the data. The following are schemes for grouping data values into classes based on how the data values are distributed.

- **Equal Interval**: The difference between the high and low values is the same for every class. So, the classification of the data will be based on a set of equal splits. For example, if the lowest value is 0 and the highest value is 10 in the data, and 5 classes are requested, the range of each class will be 0 to 2, 2 to 4, 4 to 6, 6 to 8, 8 to 10.
- **Quantile**: Each class contains an equal number of features. In this case, the points are sorted in ascending order (for the chosen data field) and each class is filled with (total number of points)/(number of classes) points starting from the lowest value to the highest.
- **Standard Deviation**: Features are placed in classes based on how much their values vary from the mean. First the mean and standard deviation of the data values are calculated. The class breaks are found by successively adding or subtracting multiples of the standard deviation from the mean.

4. On the **Class Count** drop-down list, select the number of colors to appear in your shading range.

Note

- If *"Equal Interval" scheme is selected*, on the **Scale** options, click either the **Linear** or **Logarithmic** radio button.
- If "*Standard Deviation*" *scheme is selected*, on the **Std Deviation Multiplier** field, type the multiplying factor.

5. On the **Visual Feature** options, select color mode.

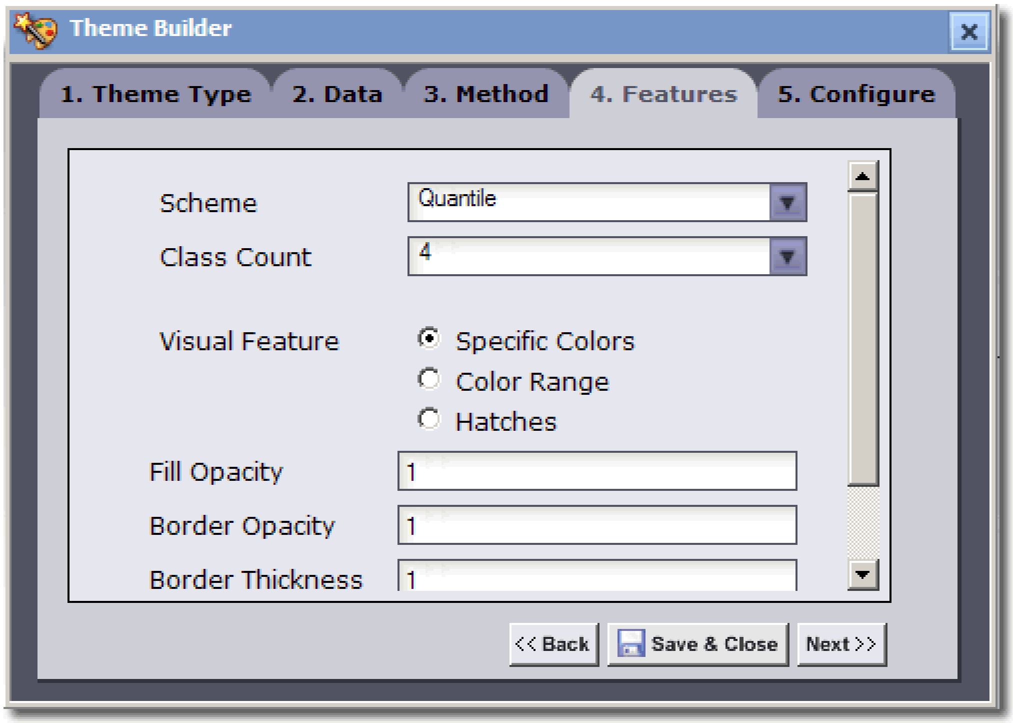
Note

There are three options for selecting the *Visual Feature*.

- **Specific Colors:** Allows you to specify a particular color for each class.
- **Color Range:** Allows you to choose a start and end color.
- **Hatches:** Allows you to specify a particular hatch for each class.

SELECTING SPECIFIC COLORS

1. On the **Visual Feature** options, click the **Specific Colors** radio button.



Scheme: Quantile
Class Count: 4
Visual Feature: ● Specific Colors ○ Color Range ○ Hatches
Fill Opacity: 1
Border Opacity: 1
Border Thickness: 1

Figure 75. Theme Builder Wizard: Features Tab (Numeric- Automatic – Specific Colors).

Features Rendering Attributes

2. On the **Fill Opacity** field, type a number from 0 to 1 to indicate the opacity of the colored regions in the layer.

3. On the **Border Opacity** field, type a number from 0 to 1 to indicate the opacity of region borders in the layer.
4. On the **Border Thickness** field, type a number from 0 to 1 to indicate the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.

5. On the **Border Color** field, type a hexadecimal color value or select a color from the color picker for the region border color. The default color is black (#000000).

Note Examples of using various Feature Attributes can be seen in Appendix B: Features Rendering Attributes on page 162.

6. Click the **Configure** tab or the **Next** button. The **Configure** tab opens.

7. Click the **Class 1** colored rectangle.

8. Select a color from the color picker.

9. Repeat the above steps for each class.

10. Click the **Empty Color** colored rectangle.

11. Select a color to indicate value-less region in the map and click **OK**.

Note The colored rectangles will change to the new color chosen after each selection.

Tip If the color picker does not have the exact color you wish to use, you can right Click the colored rectangle and manually enter the hexadecimal color value.

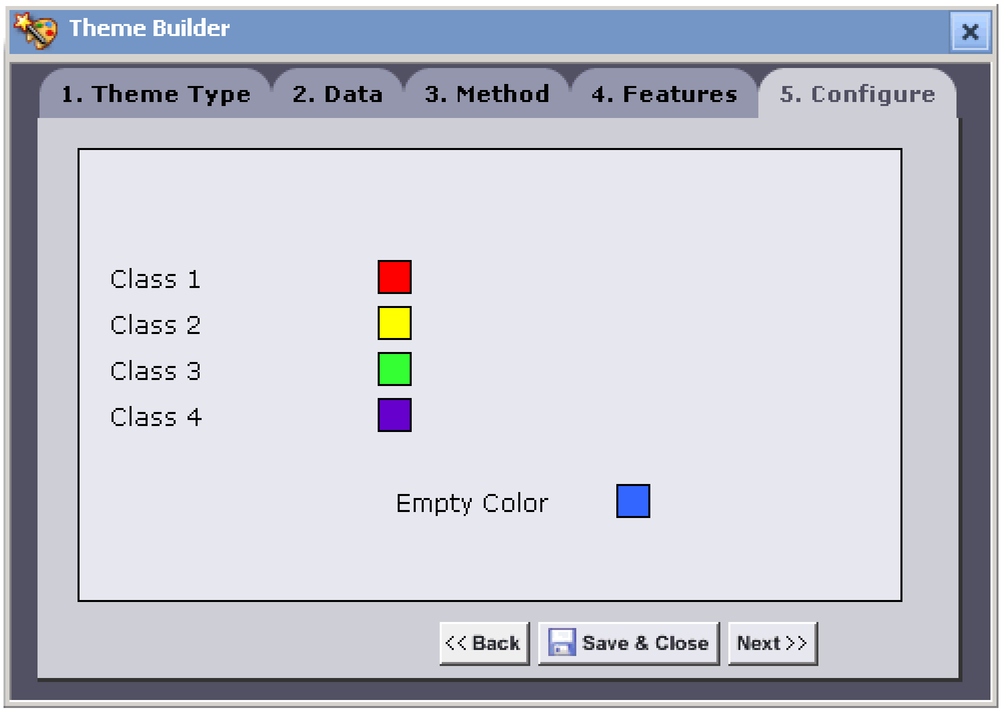
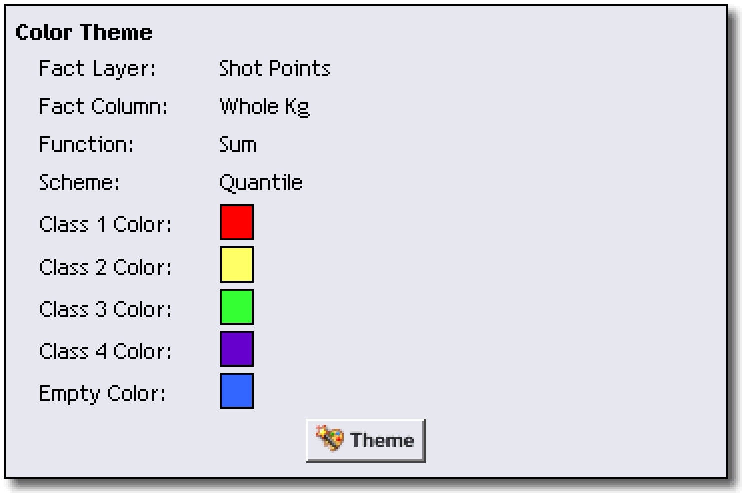


Figure 76. Theme Builder Wizard: Configure Tab (Numeric- Automatic – Specific Colors).

12. Click Save & Close. The *Theme Builder Wizard* closes. The created theme displays in the Color Theme section of the *Relationship Layer* configuration screen.



Color Theme

Fact Layer:	Shot Points
Fact Column:	Whole Kg
Function:	Sum
Scheme:	Quantile
Class 1 Color:	🟥
Class 2 Color:	🟨
Class 3 Color:	🟩
Class 4 Color:	🟪
Empty Color:	🟦

Figure 77. Themes Section showing Specific Color Theme.

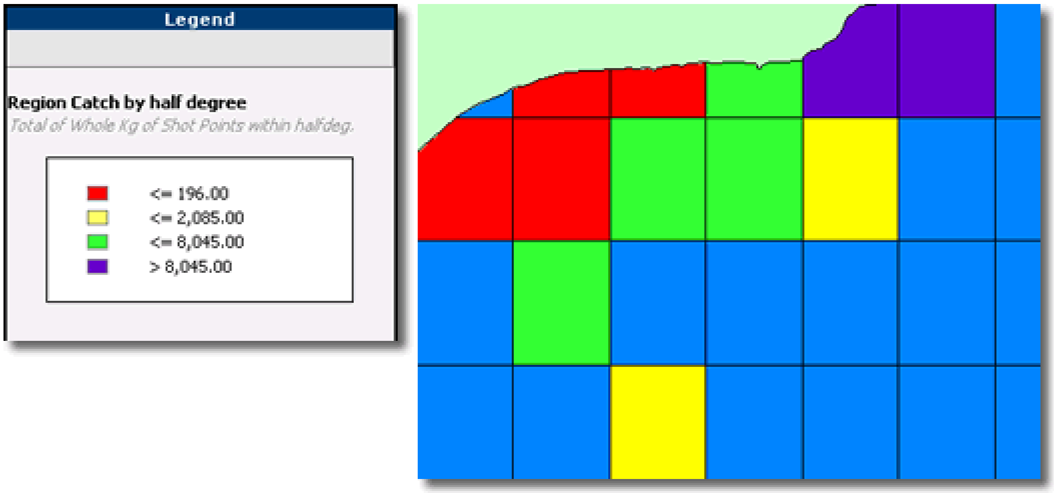

Legend
Region Catch by half degree
Total of Whole Kg of Shot Points within halfdeg.
🟥 <= 196.00
🟨 <= 2,085.00
🟩 <= 8,045.00
🟪 > 8,045.00

Figure 78. Region Relationship Layer Map View and Legend showing Specific Color Theme.

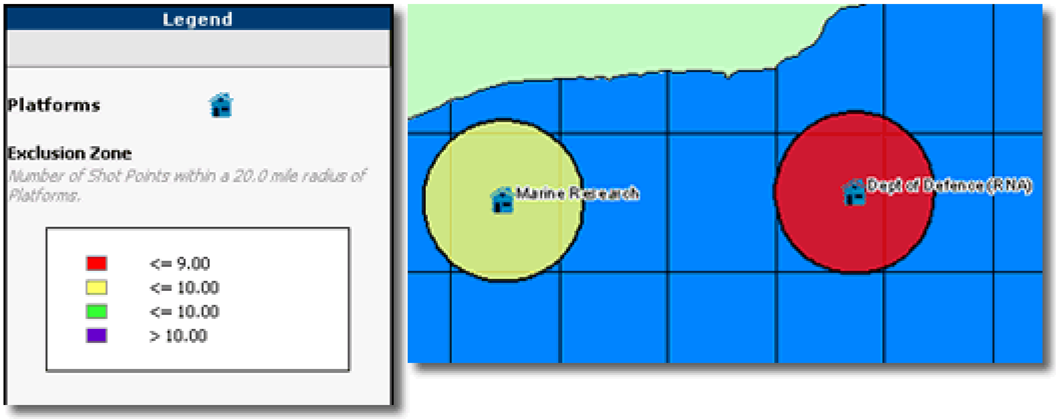
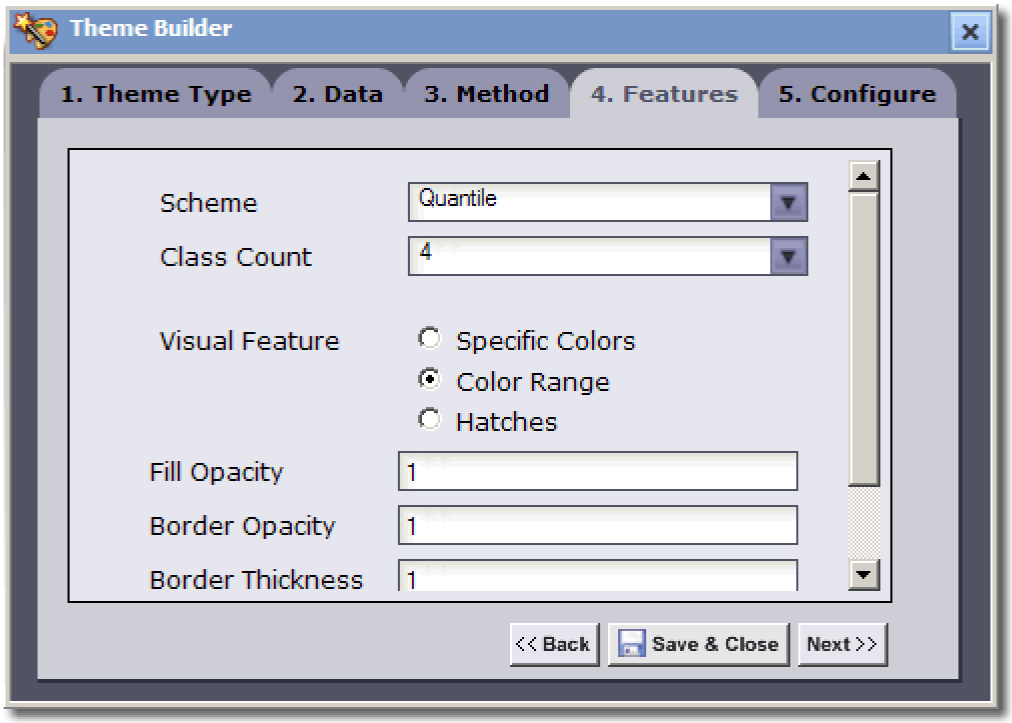


Figure 79. Radius Relationship Layer Map View and Legend showing Specific Color Theme.

SELECTING COLOR RANGE

1. On the **Visual Feature** options, click the **Color Range** radio button.



Scheme: Quantile

Class Count: 4

Visual Feature: ○ Specific Colors ● Color Range ○ Hatches

Fill Opacity: 1

Border Opacity: 1

Border Thickness: 1

Figure 80. Theme Builder Wizard: Features Tab (Numeric- Automatic – Color Range).

Features Rendering Attributes

2. On the **Fill Opacity** field, enter a number from 0 to 1 to indicate the opacity of the colored regions in the layer.

3. On the **Border Opacity** field, enter a number from 0 to 1 to indicate the opacity of region borders in the layer.

4. On the **Border Thickness** field, enter a number from 0 to 1 to indicate the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.

5. On the **Border Color** field, enter a hexadecimal color value or select a color from the color picker for the region border color. The default color is black (#000000).

Note Examples of using various Feature Attributes can be seen in Appendix B: Features Rendering Attributes on page 162.

6. Click the **Configure** tab or the **Next** button. The **Configure** tab opens.

7. Click the **Start Color** colored rectangle.

8. Select the start color from the color picker and click **OK**.

9. Click the **End Color** colored rectangle.

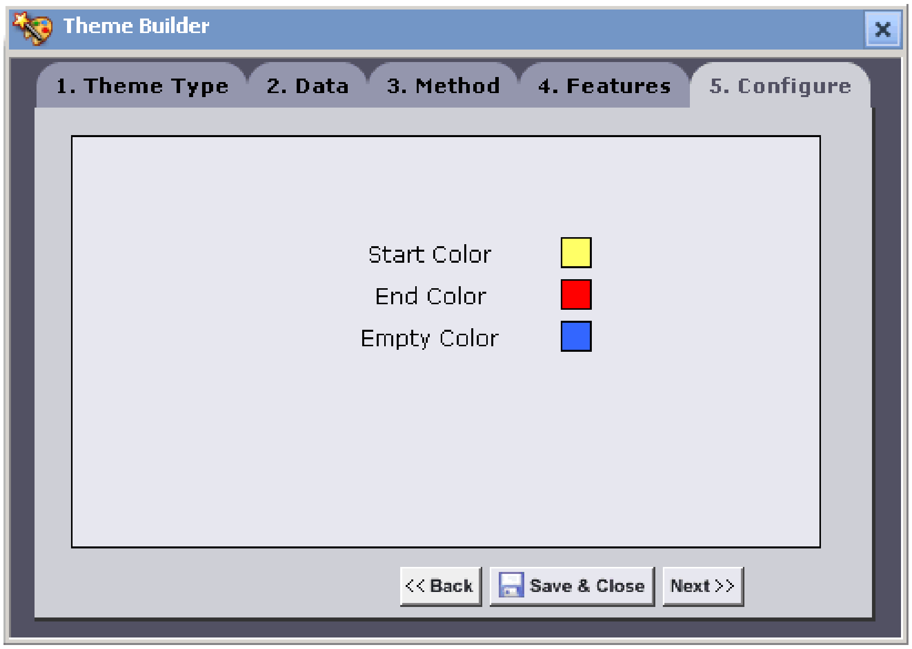
10. Select the end color from the color window and click **OK**.

11. Click the **Empty Color** colored rectangle.

12. Select a color to indicate value-less region and click **OK**.

Note The colored rectangles will change to the new color chosen after each selection.

Tip If the color picker does not have the exact color you wish to use, you can right Click the colored rectangle and manually enter the hexadecimal color value.



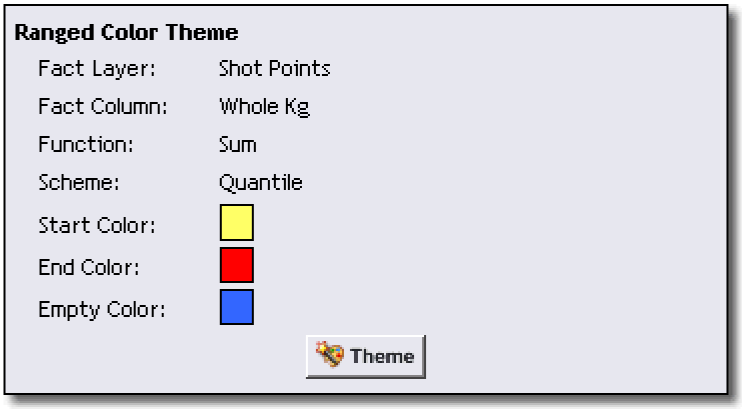
Start Color 🟨

End Color 🟥

Empty Color 🟦

Figure 81. Theme Builder Wizard: Configure Tab (Numeric- Automatic – Color Range).

13. Click Save & Close. The *Theme Builder Wizard* closes. The created theme displays in the Theme Section of the *Relationship Layer* configuration screen.



Ranged Color Theme

Fact Layer:	Shot Points
Fact Column:	Whole Kg
Function:	Sum
Scheme:	Quantile
Start Color:	🟨
End Color:	🟥
Empty Color:	🟦

Figure 82. Themes Section showing Ranged Color Theme.

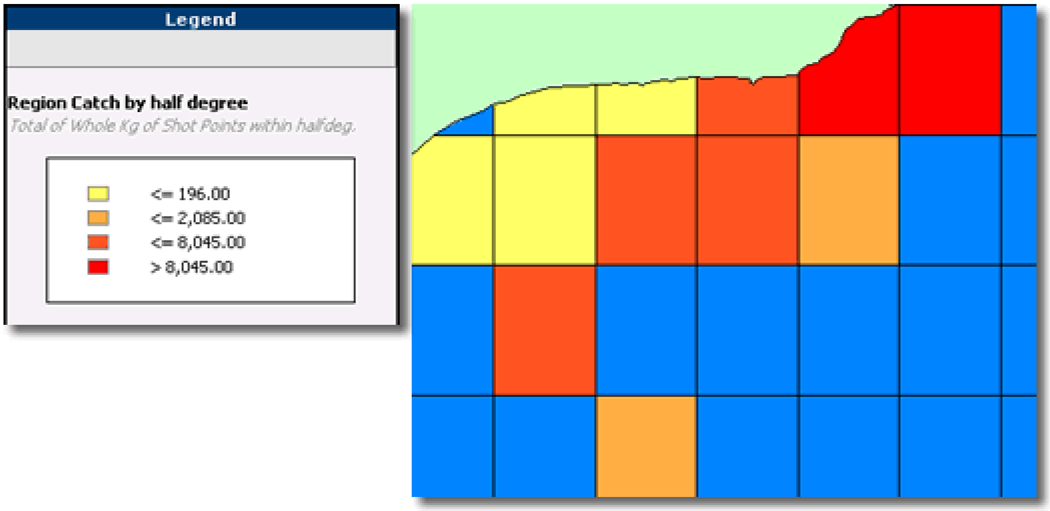

Legend
Region Catch by half degree
Total of Whole Kg of Shot Points within halfdeg.
🟨 <= 196.00
🟧 <= 2,085.00
🟧 <= 8,045.00
🟥 > 8,045.00

Figure 83. Region Relationship Layer Map View and Legend showing Ranged Color Theme.

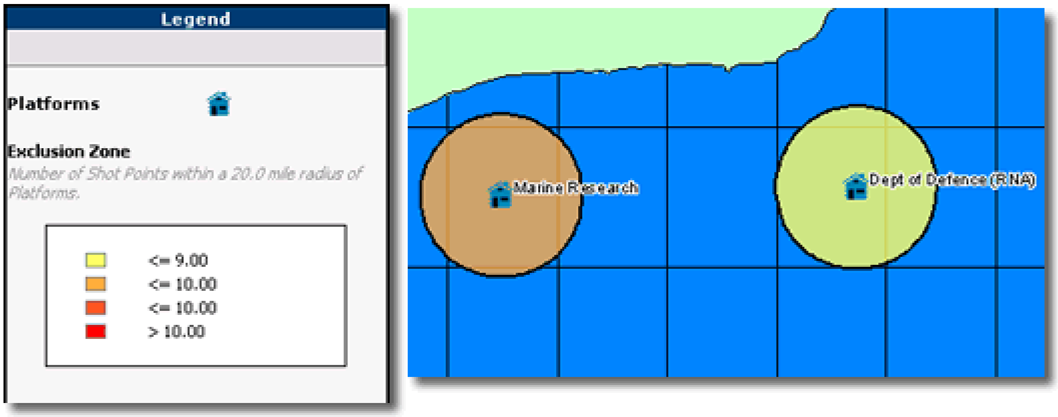
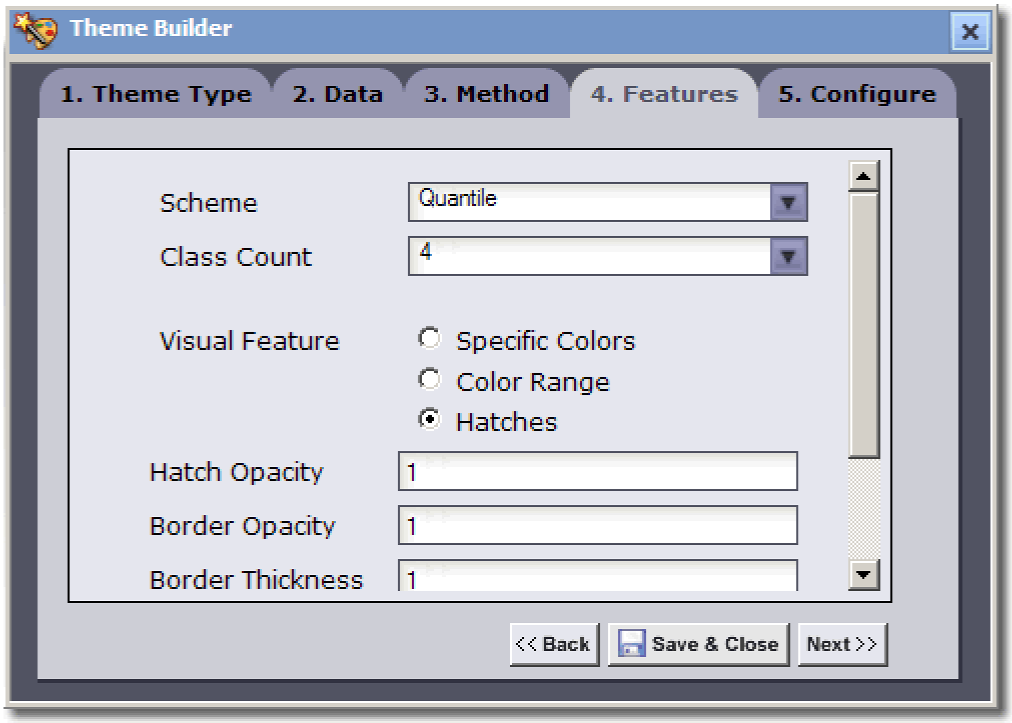


Figure 84. Radius Relationship Layer Map View and Legend showing Ranged Color Theme.

SELECTING HATCHES

1. On the **Visual Feature** options, click the **Hatches** radio button.



Theme Builder

1. Theme Type | 2. Data | 3. Method | 4. Features | 5. Configure

Scheme: Quantile

Class Count: 4

Visual Feature: ○ Specific Colors ○ Color Range ● Hatches

Hatch Opacity: 1

Border Opacity: 1

Border Thickness: 1

Figure 85. Theme Builder Wizard: Features Tab (Numeric- Automatic – Hatches).

Features Rendering Attributes

2. On the **Hatch Opacity** field, enter a number from 0 to 1 to indicate the opacity of the hatches.

3. On the **Border Opacity** field, enter a number from 0 to 1 to indicate the opacity of region borders in the layer.

4. On the **Border Thickness** field, enter a number from 0 to 1 to indicate the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.

5. On the **Border Color** field, enter the hexadecimal color value or select a color from the color picker for the region border color. The default color is black (#000000).

6. On the **Hatch Color** field, enter a hexadecimal color value or select a color from the color picker for the hatch color. The default color is black (#000000).

Note

Examples of using various Feature Attributes can be seen in Appendix B: Features Rendering Attributes on page 162.

7. Click the **Configure** tab or the **Next** button. The **Configure** tab opens.

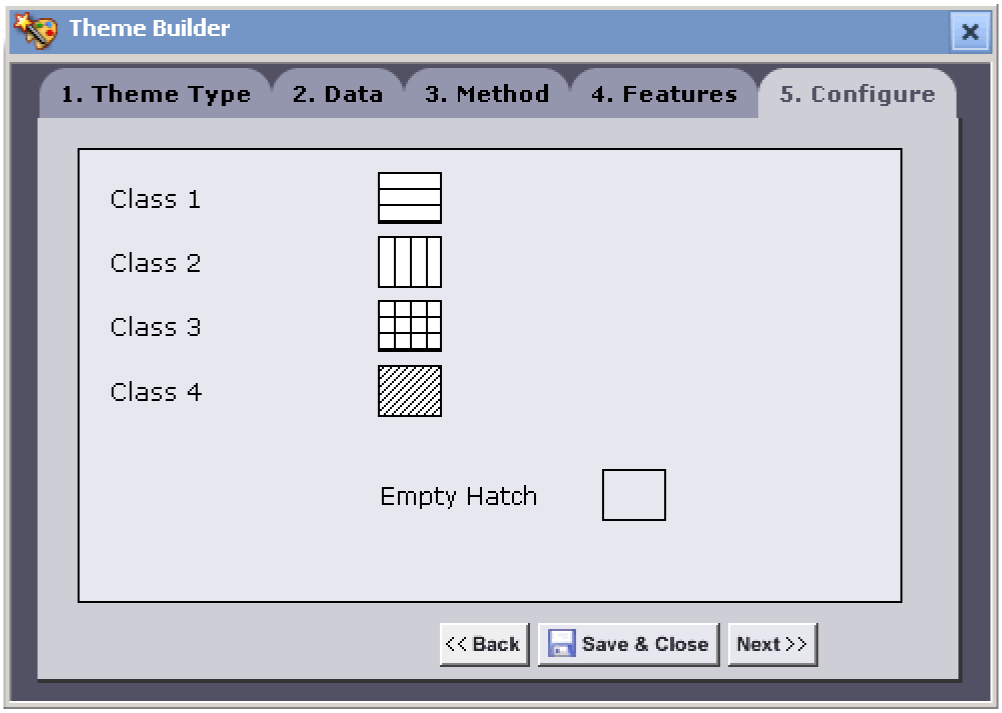
8. Click the **Class 1** hatched rectangle.

9. Select a hatch from the picker.
10. Repeat the above steps for each class.

11. Click the **Empty Hatch** hatched rectangle.

12. Select a hatch to indicate value-less regions and click **OK**.

Note The hatched rectangles will change to the new hatch after each selection.



Class 1 ▤

Class 2 ▥

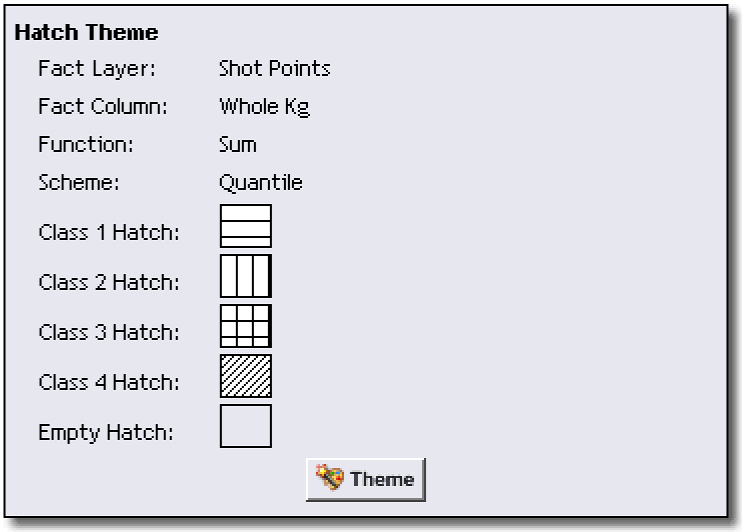
Class 3 ▦

Class 4 ▨

Empty Hatch □

Figure 86. Visual Theme Properties Section showing Hatches Selected.

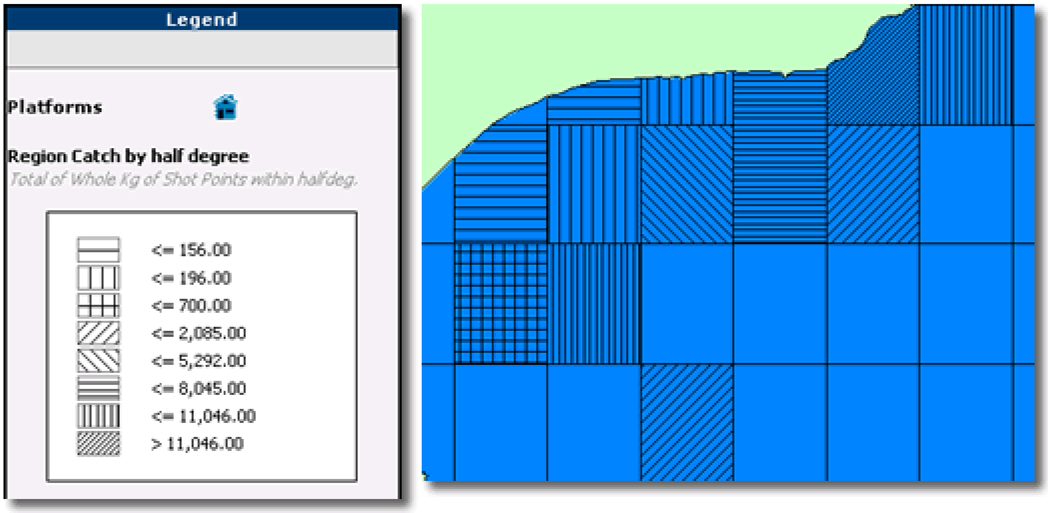
13. Click Save & Close. The *Theme Builder Wizard* closes. The created theme displays in the Hatch Theme Section of the *Relationship Layer* configuration screen.



Hatch Theme

Fact Layer:	Shot Points
Fact Column:	Whole Kg
Function:	Sum
Scheme:	Quantile
Class 1 Hatch:	▤
Class 2 Hatch:	▥
Class 3 Hatch:	▦
Class 4 Hatch:	▨
Empty Hatch:	□

Figure 87. Themes Section showing Hatched Theme.



Legend

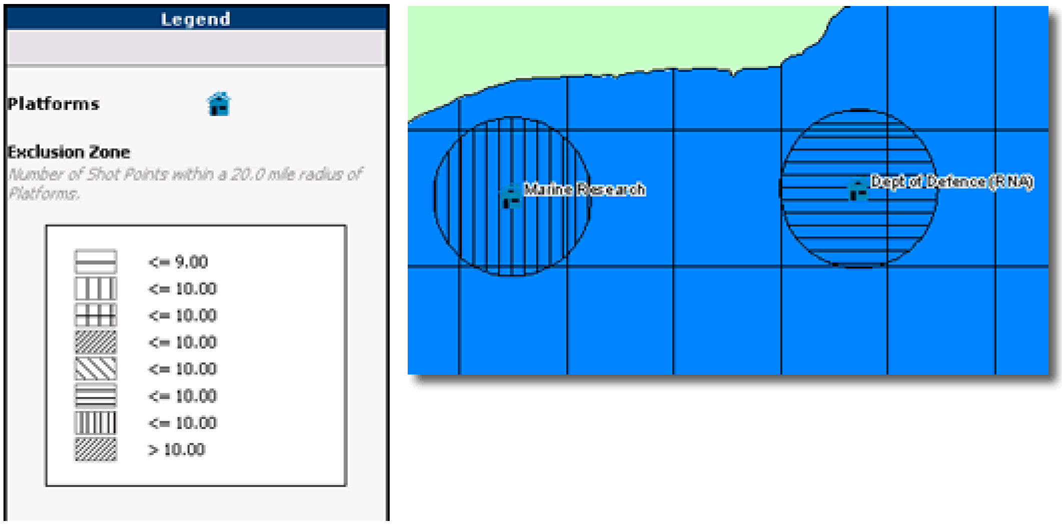
Platforms

Region Catch by half degree

Total of Whole Kg of Shot Points within halfdeg.

▤	<= 156.00
▥	<= 196.00
▦	<= 700.00
▨	<= 2,085.00
▧	<= 5,292.00
▤	<= 8,045.00
▥	<= 11,046.00
▨	> 11,046.00

Figure 88. Region Relationship Layer Map View and Legend showing Hatched.



Legend

Platforms

Exclusion Zone

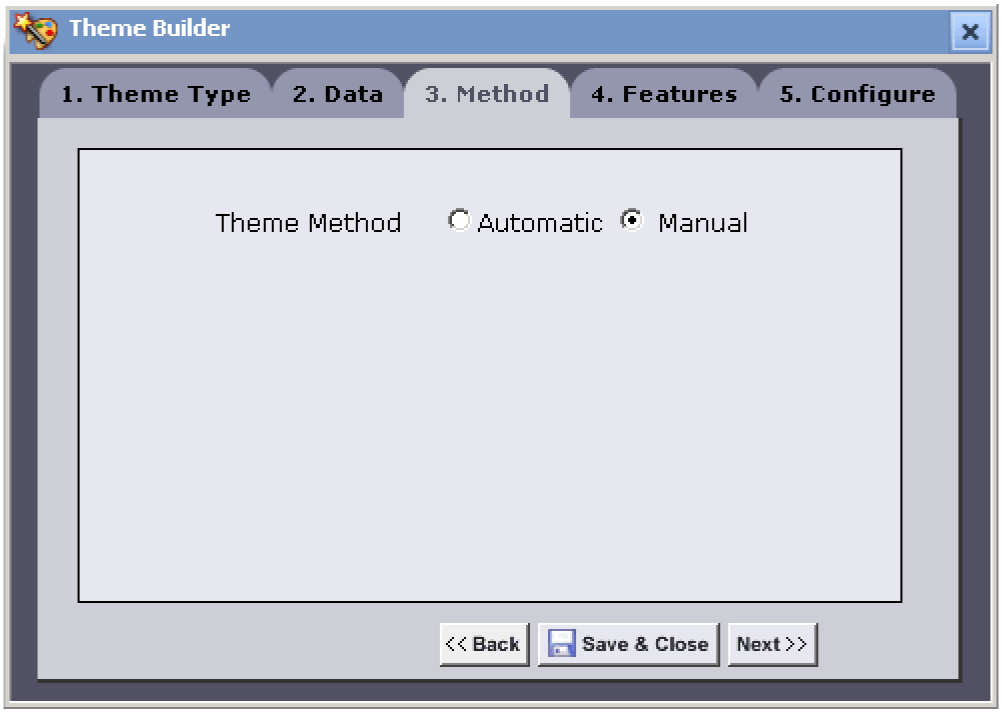
Number of Shot Points within a 20.0 mile radius of Platforms.

▤ <= 9.00
▥ <= 10.00
▦ <= 10.00
▨ <= 10.00
▧ <= 10.00
▤ <= 10.00
▥ <= 10.00
▨ > 10.00

Figure 89. Radius Relationship Layer Map View and Legend showing Hatched Theme.

MANUAL METHOD

1. On the **Method** tab, select the **Manual** radio button.



Theme Method ○ Automatic ● Manual

Figure 90. Theme Builder Wizard: Method Tab (Numeric-Manual).

2. Click the **Features** tab or the **Next** button. The **Features** tab opens.

3. On the **Visual Feature** options, select the color mode.

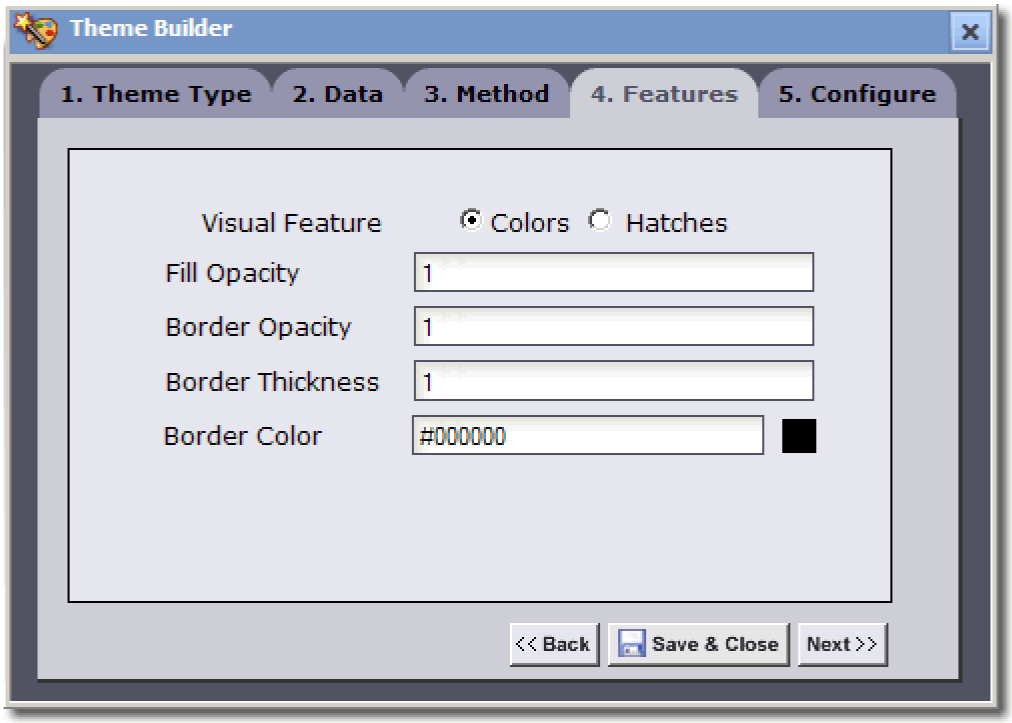
Note

There are two options for selecting the **Visual Feature**.

- **Colors:** Allows you to specify a particular color.
- **Hatches**. Allows you to specify a particular hatch.

SELECTING COLORS

1. On the **Visual Feature** options, click the **Colors** radio button.



Visual Feature ● Colors ○ Hatches

Fill Opacity 1

Border Opacity 1

Border Thickness 1

Border Color #000000 ■

Figure 91. Theme Builder Wizard: Features Tab (Numeric-Manual-Colors).

Features Rendering Attributes

2. On the **Fill Opacity** field, enter a number from 0 to 1 to indicate the opacity of the colored regions in the layer.

3. On the **Border Opacity** field, enter a number from 0 to 1 to indicate the opacity of region borders in the layer.

4. On the **Border Thickness** field, enter a number from 0 to 1 to indicate the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.

5. On the **Border Color** field, enter a hexadecimal color value or select a color from the color picker for the region border color. The default color is black (#000000).

Note

Examples of using various Feature Attributes can be seen in Appendix B: Features Rendering Attributes on page 162.

6. Click the **Configure** tab or the **Next** button. The **Configure** tab opens.

7. Enter a threshold value in the top field.

8. Click the rectangle next to the field.

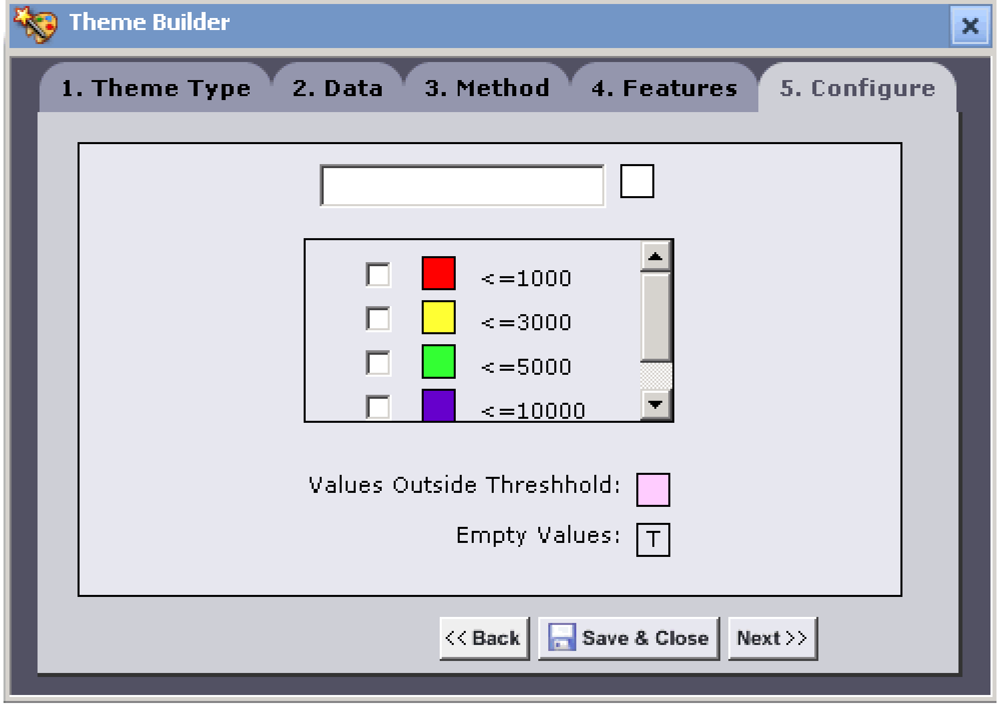
9. Select a color from the color picker to represent the threshold value. The selected threshold value and associated color displays in the preview window list.

10. Configure all other threshold conditions that you wish to associate with a color.

11. Click the **Values Outside Threshold** rectangle, then select a color from the color picker to represent any other values that have not been assigned a specific color.

12. Click the **Empty Values** rectangle, then select a color from the color picker to represent any region or circle that does not contain any values.

13. To delete values assigned to a specific color, in the Preview window list, click the check box next to the value and click **Remove Selected**.



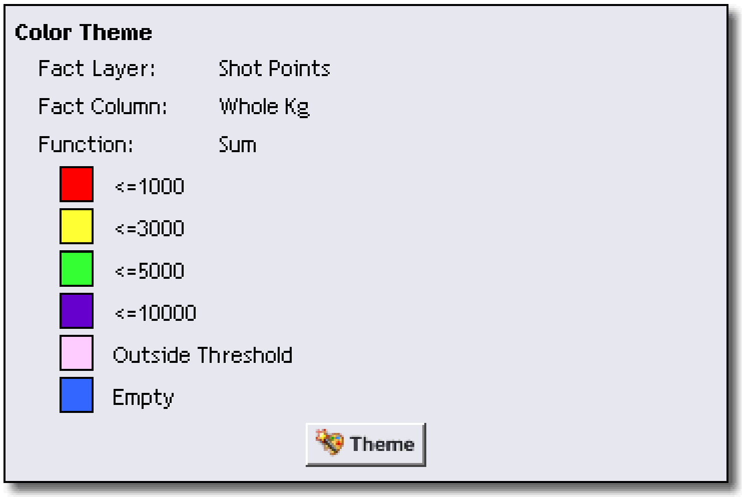
□ 🟥 <=1000
□ 🟨 <=3000
□ 🟩 <=5000
□ 🟪 <=10000

Values Outside Threshhold: ▨

Empty Values: T

Figure 92. Theme Builder Wizard: Configure Tab (Numeric-Manual-Colors).

14. Click Save & Close. The *Theme Builder Wizard* closes. The created theme displays in the **Theme Section** of the *Relationship Layer* configuration screen.



Color Theme

Fact Layer: Shot Points

Fact Column: Whole Kg

Function: Sum

🟥 <=1000

🟨 <=3000

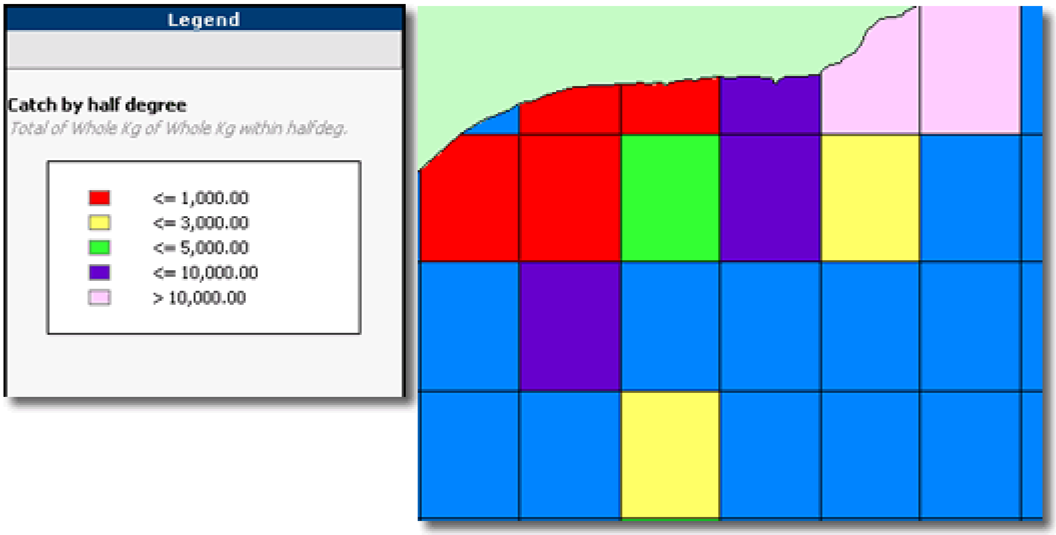
🟩 <=5000

🟪 <=10000

⬜ Outside Threshold

🟦 Empty

Figure 93. Color Themes Section (Numeric-Manual-Colors).



Legend

Catch by half degree

Total of Whole Kg of Whole Kg within halfdeg.

🟥 <= 1,000.00

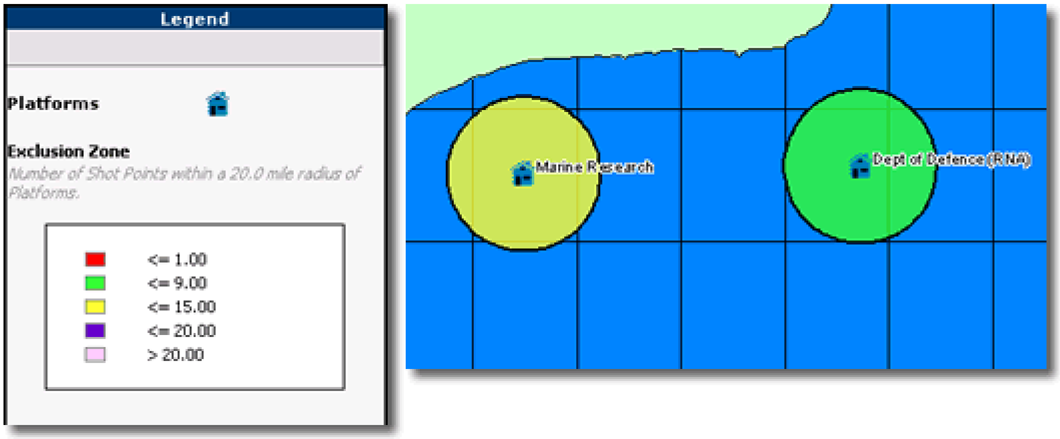
🟨 <= 3,000.00

🟩 <= 5,000.00

🟪 <= 10,000.00

⬜ > 10,000.00

Figure 94. Region Relationship Layer Map View and Legend showing Manual Color Theme.



Legend

Platforms

Exclusion Zone

Number of Shot Points within a 20.0 mile radius of Platforms.

🟥 <= 1.00

🟩 <= 9.00

🟨 <= 15.00

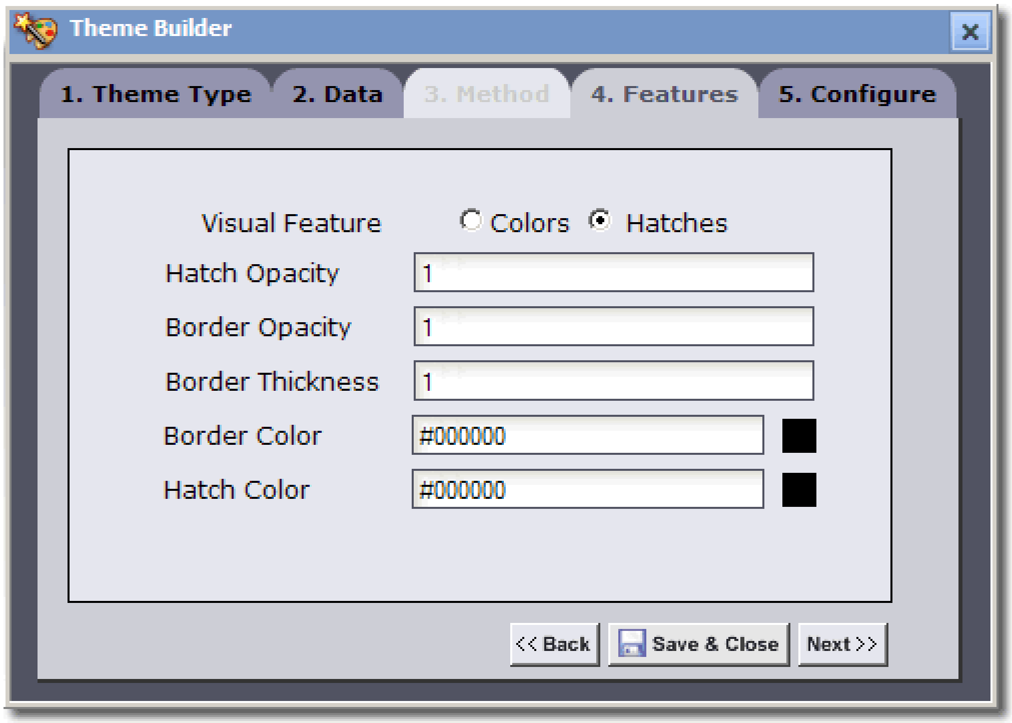
🟪 <= 20.00

⬜ > 20.00

Figure 95. Radius Relationship Layer Map View and Legend showing Manual Color Theme.

SELECTING HATCHES

1. On the **Visual Feature** options, click the **Hatches** radio button.



Visual Feature ○ Colors ● Hatches

Hatch Opacity 1

Border Opacity 1

Border Thickness 1

Border Color #000000 ■

Hatch Color #000000 ■

Figure 96. Theme Builder Wizard: Features Tab (Numeric-Manual-Hatches).

Features Rendering Attributes

2. On the **Hatch Opacity** field, enter a number from 0 to 1 to indicate the opacity of the hatches.

3. On the **Border Opacity** field, enter a number from 0 to 1 to indicate the opacity of region borders in the layer.

4. On the **Border Thickness** field, enter a number from 0 to 1 to indicate the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.

5. On the **Border Color** field, enter the hexadecimal color value or select a color from the color picker for the region border color. The default color is black (#000000).

6. On the **Hatch Color** field, enter a hexadecimal color value or select a color from the color picker for the hatch color. The default color is black (#000000).

Note Examples of using various Feature Attributes can be seen in Appendix B: Features Rendering Attributes on page 162.

7. Click the **Configure** tab or the **Next** button, the wizard will move to the **Configure** tab.

8. Enter a threshold value in the top field.

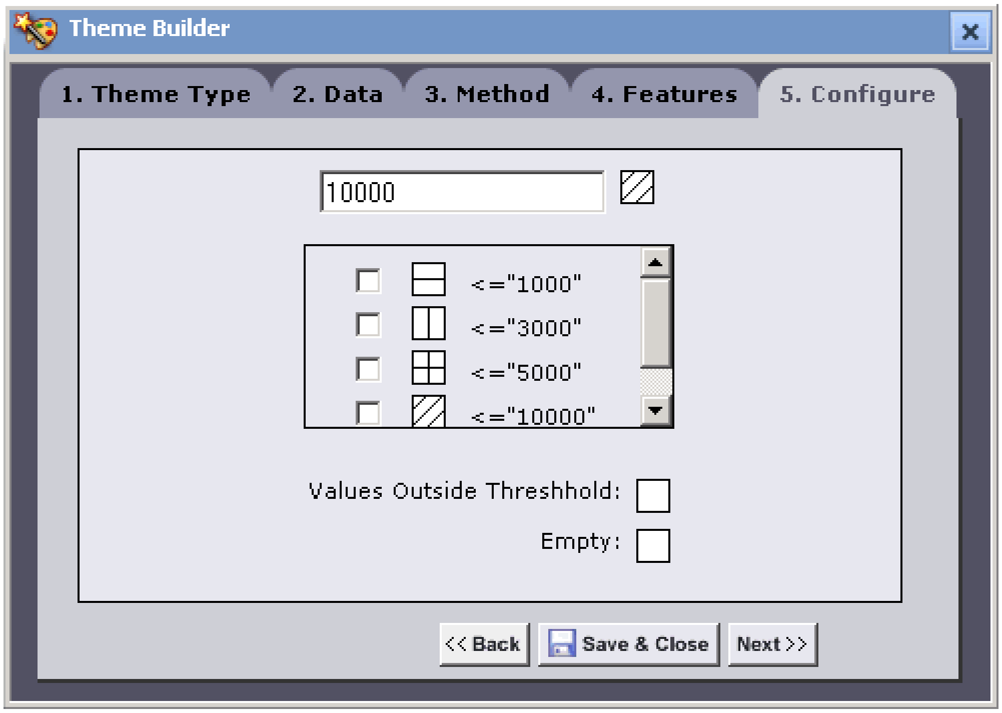
9. Click the rectangle next to the field.
10. Select a hatch from the picker that you want to associate with the threshold value. The selected threshold value and associated hatch displays in the preview window list.

11. Configure all other threshold conditions that you wish to associate with a hatch.

12. Click the **Values Outside Threshold** rectangle, then select a hatch from the picker to represent any other values that have not been assigned a specific hatch.

13. Click the **Empty Values** rectangle, then select a hatch from the picker to represent any region or circle that does not contain any values.

14. To delete values assigned to a specific color, in the Preview window list, click the check box next to the value and click **Remove Selected**.



10000 ▨

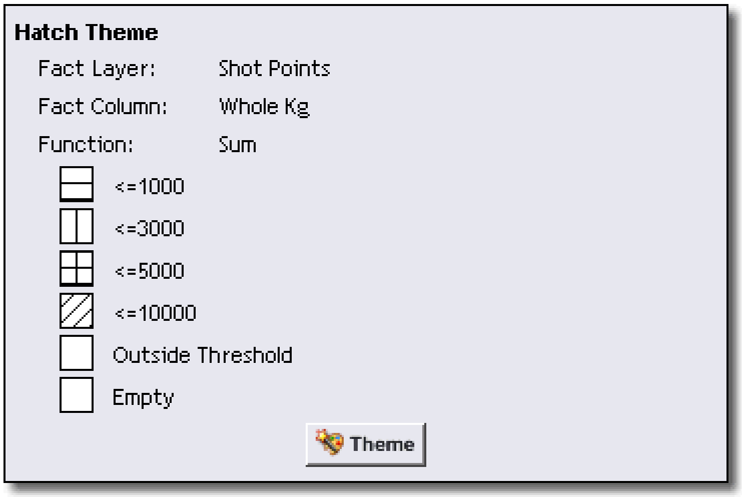
□ ▤ <="1000"
□ ▥ <="3000"
□ ▦ <="5000"
□ ▨ <="10000"

Values Outside Threshhold: □

Empty: □

Figure 97. Theme Builder Wizard: Configure Tab (Numeric-Manual-Hatches).

15. Click Save & Close. The *Theme Builder Wizard* will close. The created theme displays in the Theme Section of the *Relationship Layer* configuration screen.



Hatch Theme

Fact Layer: Shot Points

Fact Column: Whole Kg

Function: Sum

▤ <=1000

▥ <=3000

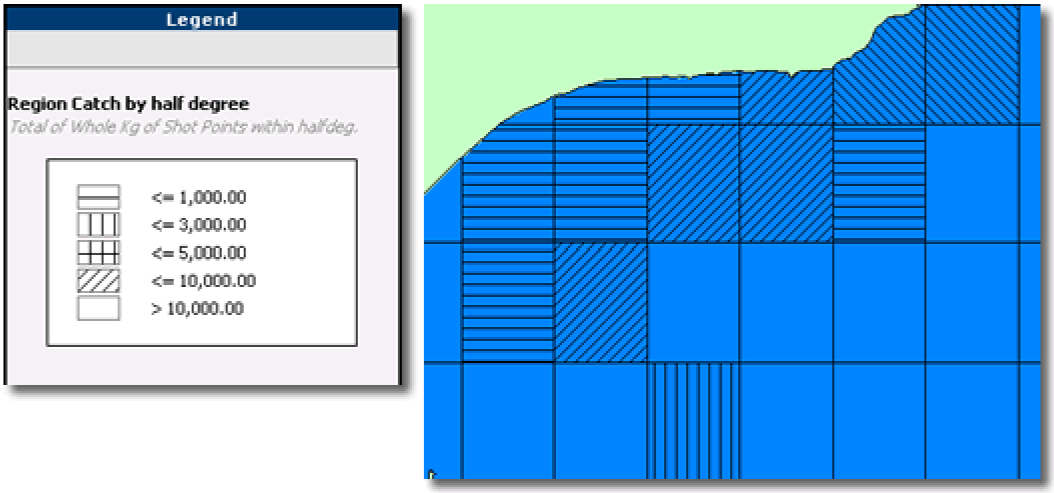
▦ <=5000

▨ <=10000

□ Outside Threshold

□ Empty

Figure 98. Hatch Theme Section (Numeric-Manual-Hatch).



Region Catch by half degree

Total of Whole Kg of Shot Points within halfdeg.

▤ <= 1,000.00

▥ <= 3,000.00

▦ <= 5,000.00

▨ <= 10,000.00

□ > 10,000.00

Figure 99. Region Relationship Layer Map View and Legend showing Manual Hatch.

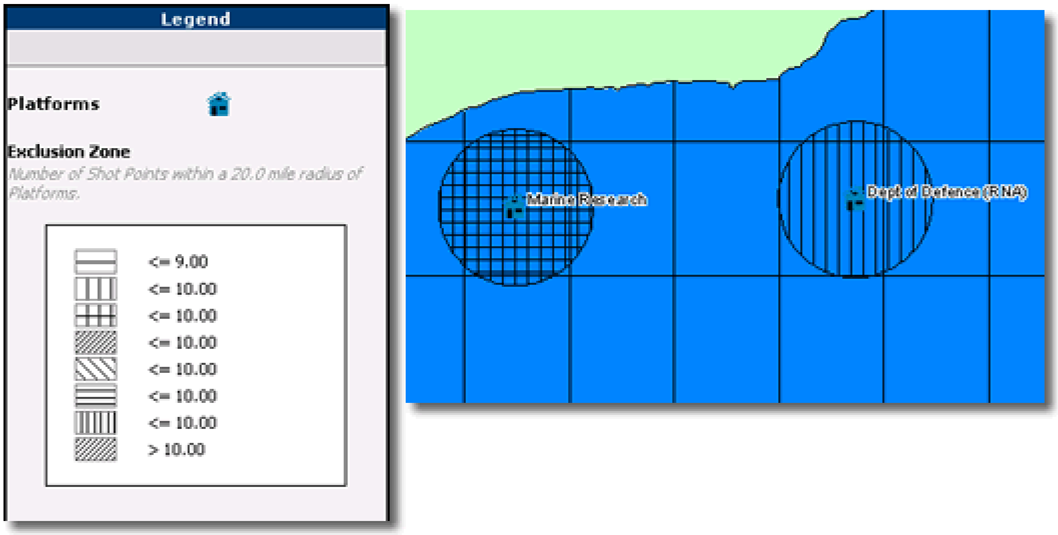


Figure 100. Radius Relationship Layer Map View and Legend showing Manual Hatch Theme.

UNSHADED AND TRANSPARENT COLORS

The *Theme Builder Wizard* color picker includes the option to select an '*unshaded color*' or '*transparent color*'.

If the 'unshaded color' is chosen for *Radius Relationship* layers, the circles are removed completely so that they do not appear on the map, nor can they be exported. Hidden circles do not have popup information.

If the '*transparent color*' is applied to a *Radius Relationship* layer, the circles appear 'transparent' on the map, except for a surrounding border. It displays popup information.

For a Region Relationship layer, selecting either the 'unshaded color' or 'transparent color' makes the regions on the map transparent so that the underlying areas can still be seen.

STRING AGGREGATION

Map Intelligence allows you to perform a function on string values from a specified fact column. String aggregations require you to specify a color/hatch condition for a specific value instead of a threshold. The available string functions include:

- **Most Common** – this function applies the condition if the nominated value is the most common value in the region.
- **Uniform** – this function applies the condition if the nominated value is the only value from the specified column in the region.
- **Majority** – this function applies the condition if the nominated value makes up more than half of the values in the region.

➢ *Creating a theme based on a String Aggregation*

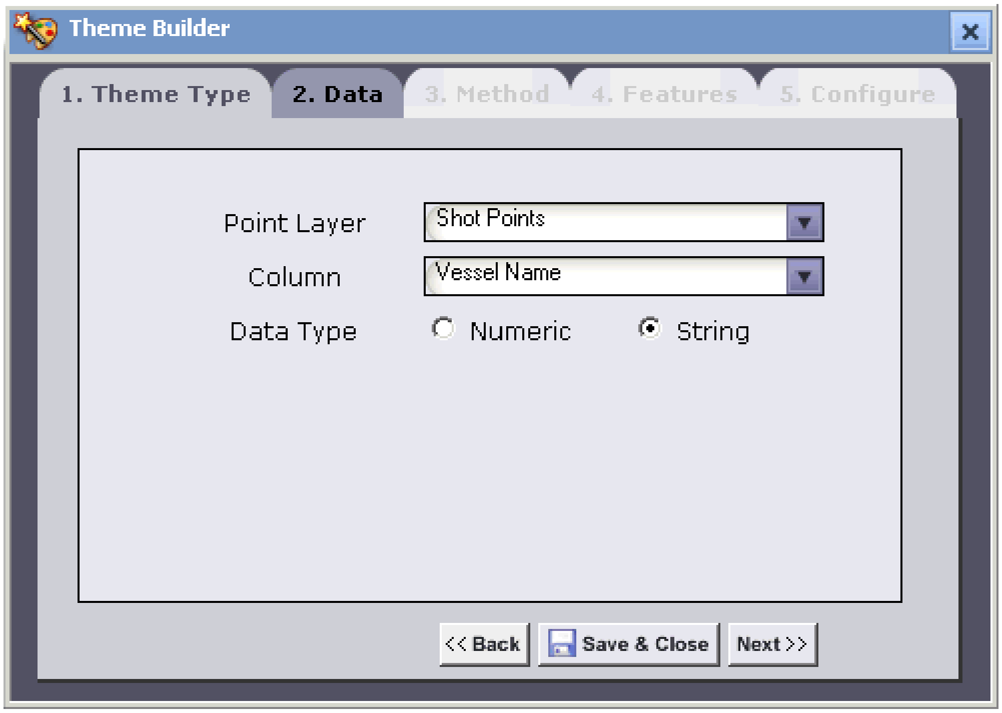
1. Click Theme, the *Theme Builder Wizard* displays with the **Theme Type** tab open by default.

2. On the **Point Layer** drop down list, select the Point Layer containing the points to geographically relate to the reference layer.

Note When related to a built-in region layer the points are grouped according to the regions they are contained in. When related to another Point Layer, the points are grouped according to which points in the reference layer they fall within the given radius of.

3. On the **Column** drop down list, select the column to use to color the regions. The data for this column are extracted from the points and aggregated according to the geographical group of the points.

4. Select the **String** radio button.



Point Layer: Shot Points

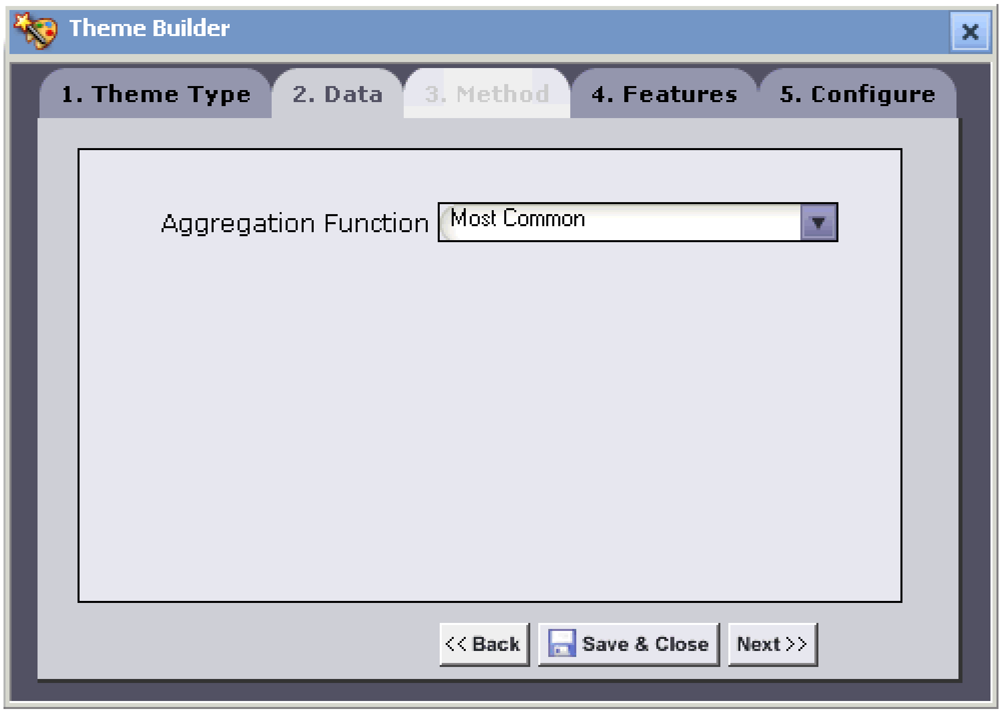
Column: Vessel Name

Data Type ○ Numeric ● String

Figure 101. Theme Builder Wizard: Theme Type Tab (String).

5. Click the **Data** tab or the **Next** button. The **Data** tab opens.

6. On the **Aggregation Function** drop-down list, select the function to use for the layer. The string functions available are: *Most Common*, *Uniform* and *Majority*.



Aggregation Function: Most Common

Figure 102. Theme Builder Wizard: Data Tab (String) with 'Most Common' selected.

7. Click the **Features** tab or the **Next** button. The **Features** tab opens.

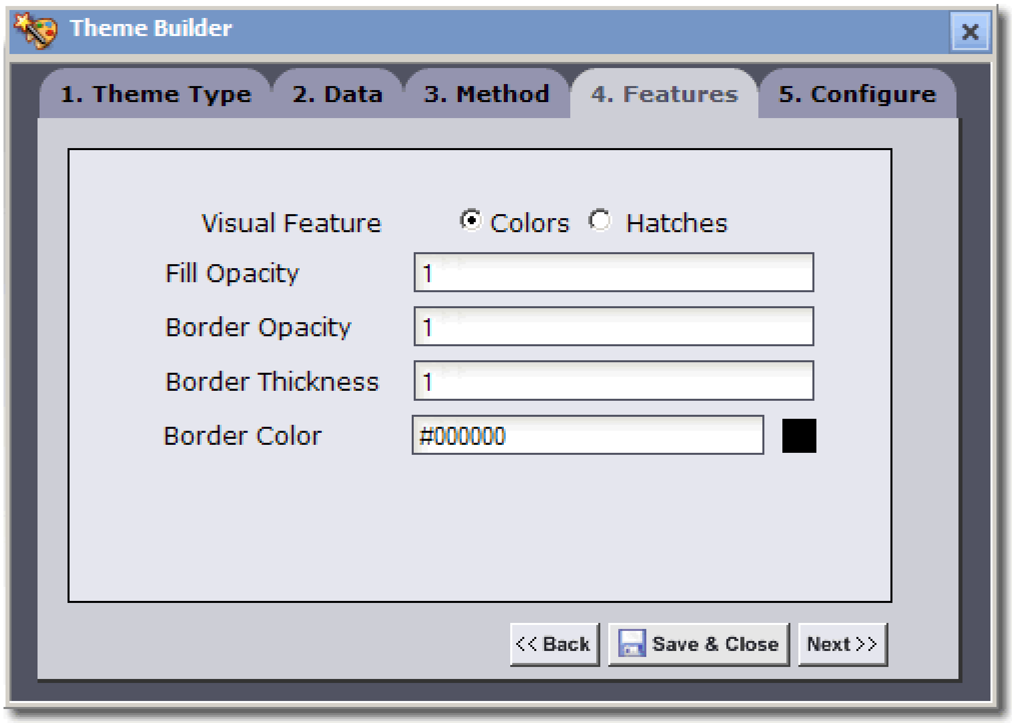
8. On the **Visual Feature** options, select the color mode.

Note: There are two (2) options for selecting the **Visual Feature**.

- **Colors:** Allows you to specify a particular color.
- **Hatches**: Allows you to specify a particular hatch.

SELECTING COLORS

1. On the **Visual Feature** options, click the **Colors** radio button.



Visual Feature ● Colors ○ Hatches
Fill Opacity 1
Border Opacity 1
Border Thickness 1
Border Color #000000 ■

Figure 103. Theme Builder Wizard: Features Tab (String –Colors).

Features Rendering Attributes

2. On the **Fill Opacity** field, enter a number from 0 to 1 to indicate the opacity of the colored regions in the layer.

3. On the **Border Opacity** field, enter a number from 0 to 1 to indicate the opacity of region borders in the layer.

4. On the **Border Thickness** field, enter a number from 0 to 1 to indicate the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.

5. On the **Border Color** field, enter a hexadecimal color value or select a color from the color picker for the region border color. The default color is black (#000000).

6. Click the **Configure** tab or the **Next** button. The **Configure** tab opens.

Tip You can shade a region by applying a color to a built-in map layer or circle around a point.

7. On the top drop-down list, select a value from the specified fact column.

Note In some instances only a sub-set of values displays in the value list box. Click 🔄 to display all values. Be aware that large datasets may take sometime to process.

8. Click the rectangle next to the top drop-down list.

9. Select a color from the color picker that you want to associate with the selected value. The selected value and associated color displays in the preview window list.

Tip If the color picker does not have the preferred color, right-Click the colored rectangle and manually type the hexadecimal color value, instead.

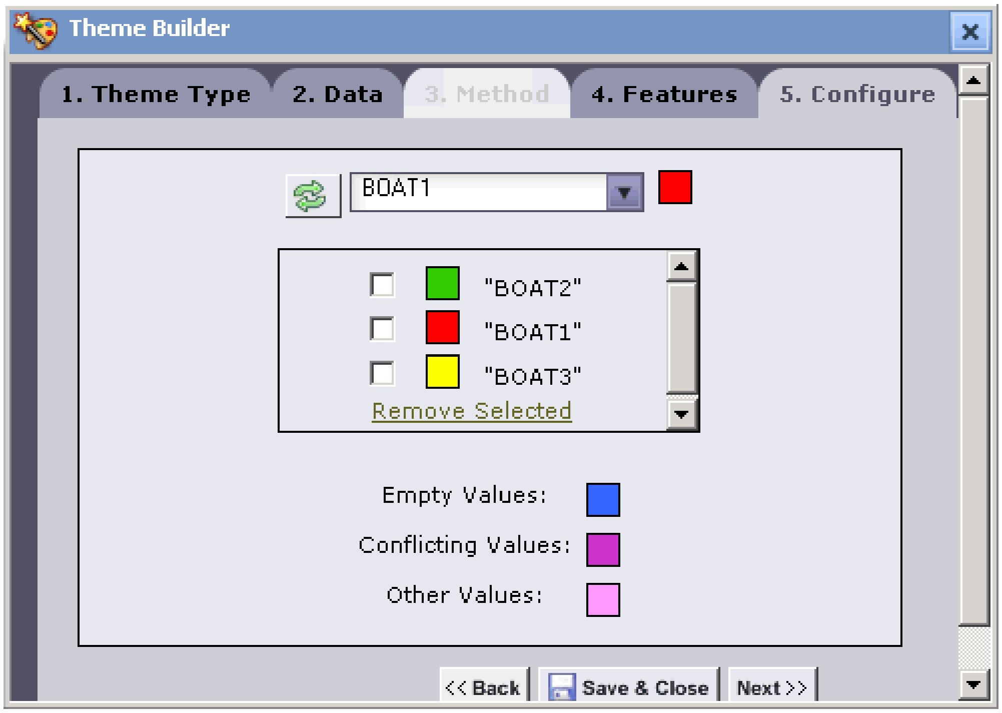
10. Configure any other values that you wish to associate with a color.

Note Any values not assigned a specific color is colored according to the color assigned to **Other Values .** *See the following discussion.*

11. Click the **Empty Values** rectangle and select a color from the color picker to represent any value-less region or circle..

12. Click the **Conflict Values** rectangle and select a color from the color picker to represent any region or circle that does not meet any specified condition, e.g. *a conflict condition will be returned if the 'Uniform' function has been set and there is more than one type of value present in the region.*

13. Click the **Other Values** rectangle and select a color from the color picker to represent any values that have not been assigned with a specific color.



Theme Builder

BOAT1 ▼ 🟥

☐ 🟩 "BOAT2"
☐ 🟥 "BOAT1"
☐ 🟨 "BOAT3"

Empty Values: 🟦

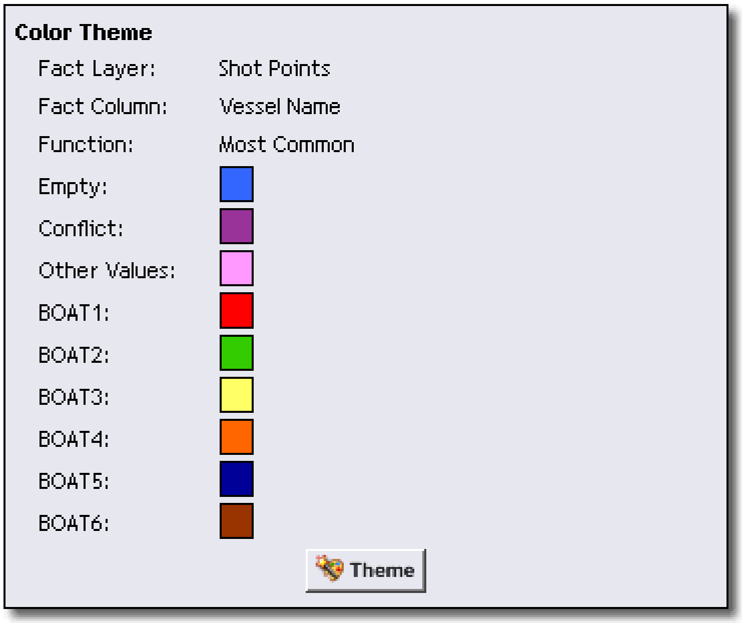
Conflicting Values: 🟪

Other Values: 🟪

Figure 104. Theme Builder Wizard: Configure Tab (String – Colors).

14. To delete values assigned to a specific color, in the Preview window list, click the check box next to the value and click **Remove Selected**.

15. Click Save & Close. The *Theme Builder Wizard* closes. The created theme displays in the Theme Section of the *Relationship Layer* configuration screen.



Color Theme

Fact Layer: Shot Points

Fact Column: Vessel Name

Function: Most Common

Empty: 🟦

Conflict: 🟪

Other Values: 🟪

BOAT1: 🟥

BOAT2: 🟩

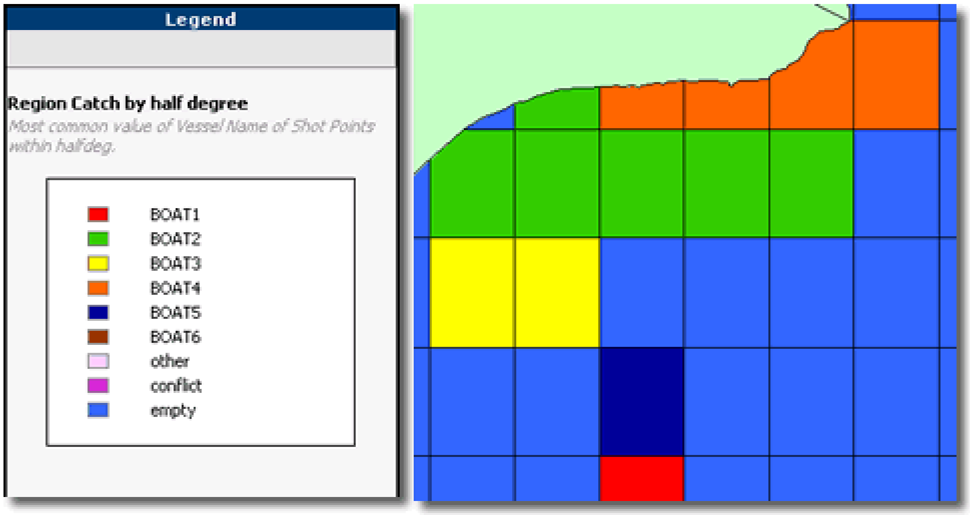
BOAT3: 🟨

BOAT4: 🟧

BOAT5: 🟦

BOAT6: 🟫

Figure 105. Color Theme (String – Colors).



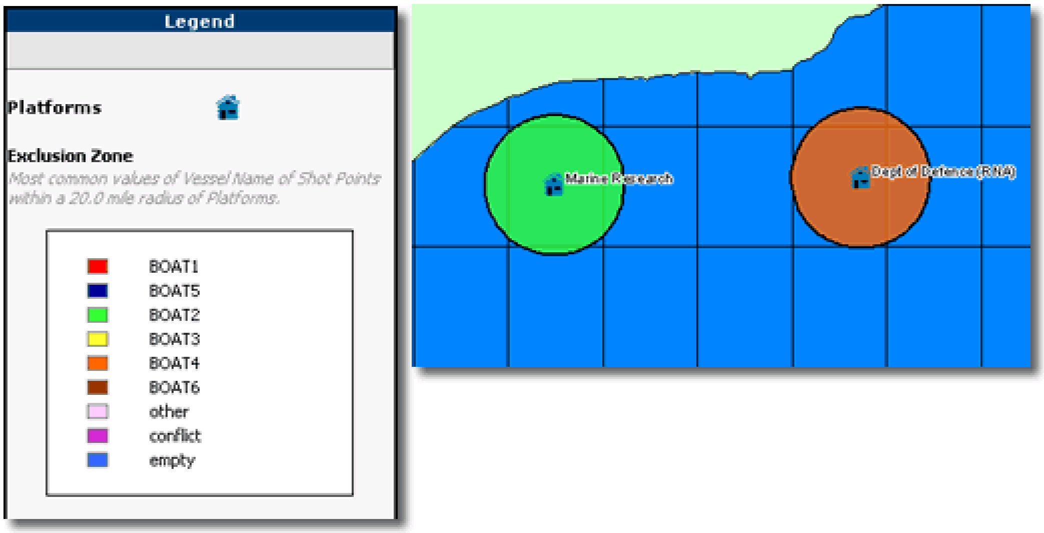
Legend

Region Catch by half degree

Most common value of Vessel Name of Shot Points within halfdeg.

- 🟥 BOAT1
- 🟩 BOAT2
- 🟨 BOAT3
- 🟧 BOAT4
- 🟦 BOAT5
- 🟫 BOAT6
- ⬜ other
- 🟪 conflict
- 🟦 empty

Figure 106. Region Relationship Layer Map View and Legend showing Color Theme (String – Colors).



Legend

Platforms

Exclusion Zone

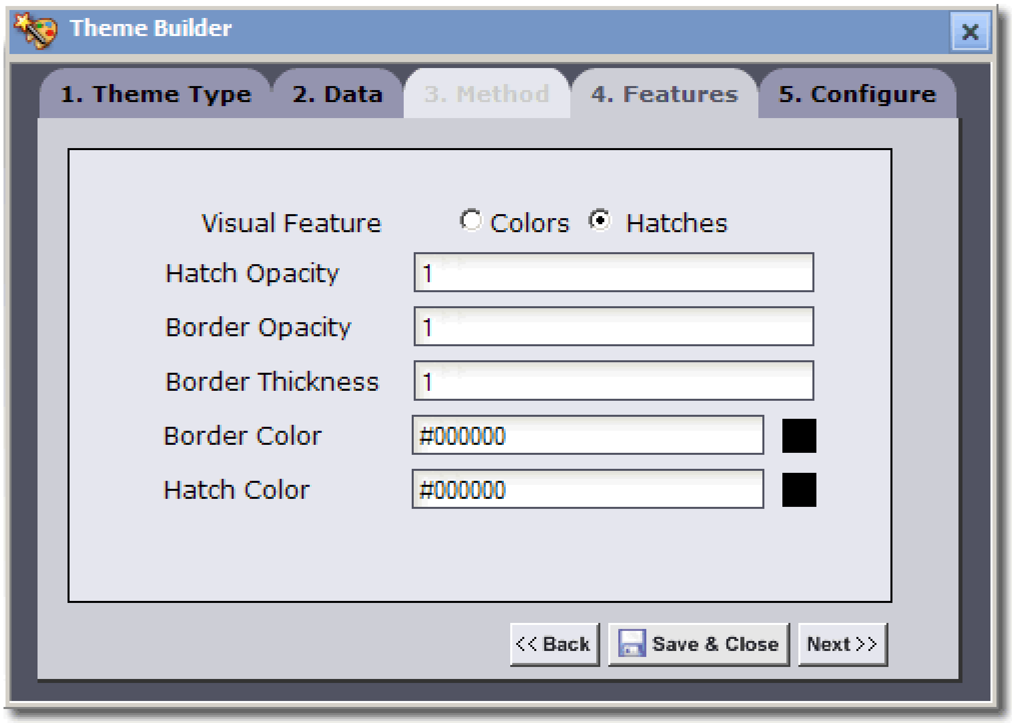
Most common values of Vessel Name of Shot Points within a 20.0 mile radius of Platforms.

- 🟥 BOAT1
- 🟦 BOAT5
- 🟩 BOAT2
- 🟨 BOAT3
- 🟧 BOAT4
- 🟫 BOAT6
- ⬜ other
- 🟪 conflict
- 🟦 empty

Figure 107. Radius Relationship Layer Map View and Legend showing Color Theme (String – Colors).

SELECTING HATCHES

1. On the **Visual Feature** options, click the **Hatches** radio button.



Visual Feature ○ Colors ● Hatches

Hatch Opacity 1

Border Opacity 1

Border Thickness 1

Border Color #000000 ■

Hatch Color #000000 ■

Figure 108. Theme Builder Wizard: Features Tab (String – Hatches).

Features Rendering Attributes

2. On the **Hatch Opacity** field, enter a number from 0 to 1 to indicate the opacity of the hatches.

3. On the **Border Opacity** field, enter a number from 0 to 1 to indicate the opacity of region borders in the layer.

4. On the **Border Thickness** field, enter a number from 0 to 1 to indicate the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.

5. On the **Border Color** field, enter the hexadecimal color value or select a color from the color picker for the region border color. The default color is black (#000000).

6. On the **Hatch Color** field, enter a hexadecimal color value or select a color from the color picker for the hatch color. The default color is black (#000000).

7. Click the **Configure** tab or the **Next** button. The **Configure** tab opens.

Tip

You can shade a region by applying a hatch to a built-in map layer or circle around a point.

8. On the top drop-down list, select a value from the specified fact column.

Note

Any values not assigned a specific color will be colored according to the color assigned to **Other Values** . *See the following discussion.*

9. Click the rectangle next to the top drop-down list.

10. Select a hatch from the picker that you want to associate with the selected value. The selected value and associated hatch displays in the preview window list.

11. Configure any other values that you wish to associate with a hatch.

> Note
>
> Any values not assigned a specific hatch will be hatched according to the hatch assigned to **Other Values.** *See the following discussion.*

12. Click the **Empty Values** rectangle and select a hatch from the picker to represent any value-less region or circle.

13. Click the **Conflict Values** rectangle and select a hatch from the picker to represent any region or circle that does not meet any specified condition, e.g. *a conflict condition will be returned if the 'Uniform' function has been set and there is more than one type of value present in the region*.

14. Click the **Other Values** rectangle and select a hatch from the picker to represent any values that have not been assigned with a specific hatch.

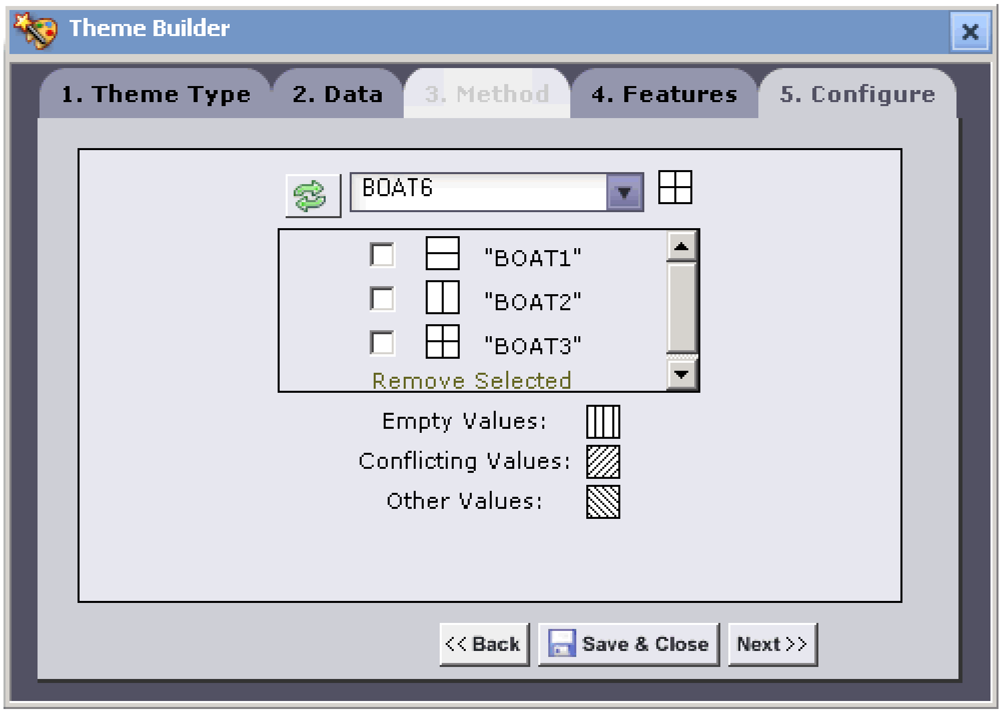
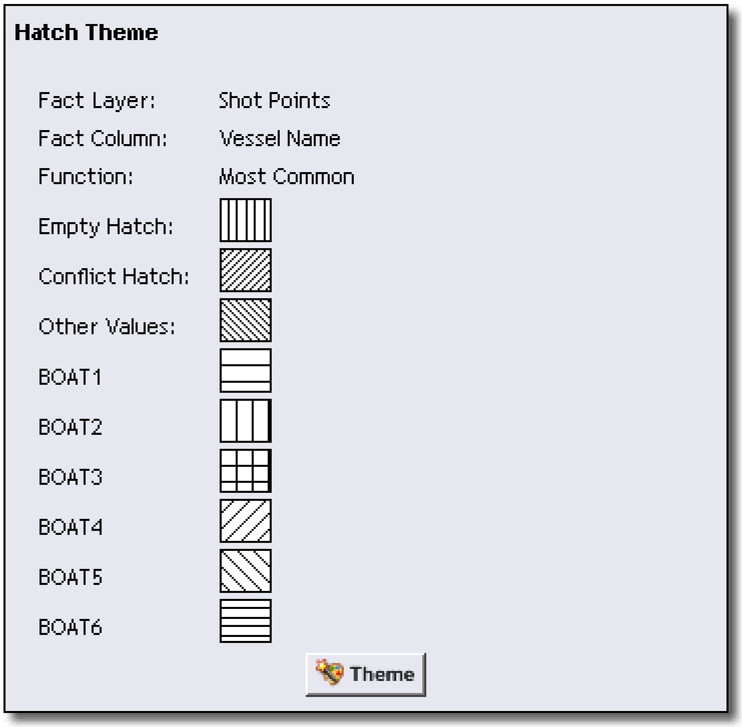


Figure 109. Theme Builder Wizard: Configure Tab (String – Hatch).

15. To delete values assigned to a specific hatch, in the Preview window list, click the check box next to the value and click **Remove Selected**.

16. Click Save & Close. The *Theme Builder Wizard* closes. The created theme displays in the **Theme Section** of the *Relationship Layer* configuration screen.



Hatch Theme

Fact Layer:	Shot Points
Fact Column:	Vessel Name
Function:	Most Common
Empty Hatch:	▥
Conflict Hatch:	▨
Other Values:	▧
BOAT1	▤
BOAT2	▥
BOAT3	▦
BOAT4	▨
BOAT5	▧
BOAT6	▤

Figure 110. Hatch Theme (String – Hatches).

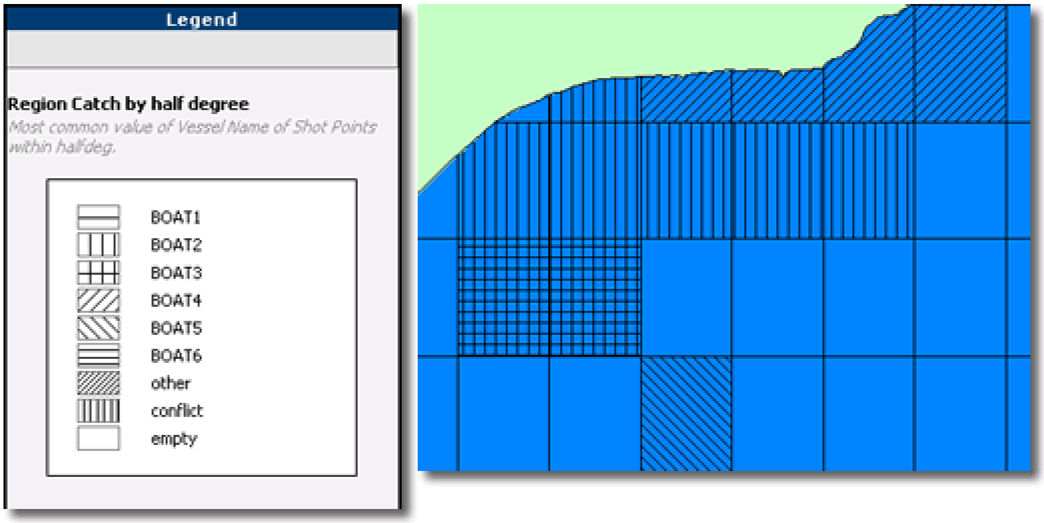

Legend
Region Catch by half degree
Most common value of Vessel Name of Shot Points within halfdeg.
BOAT1
BOAT2
BOAT3
BOAT4
BOAT5
BOAT6
other
conflict
empty

Figure 111. Region Relationship Layer Map View and Legend showing Hatch Theme (String – Hatch).

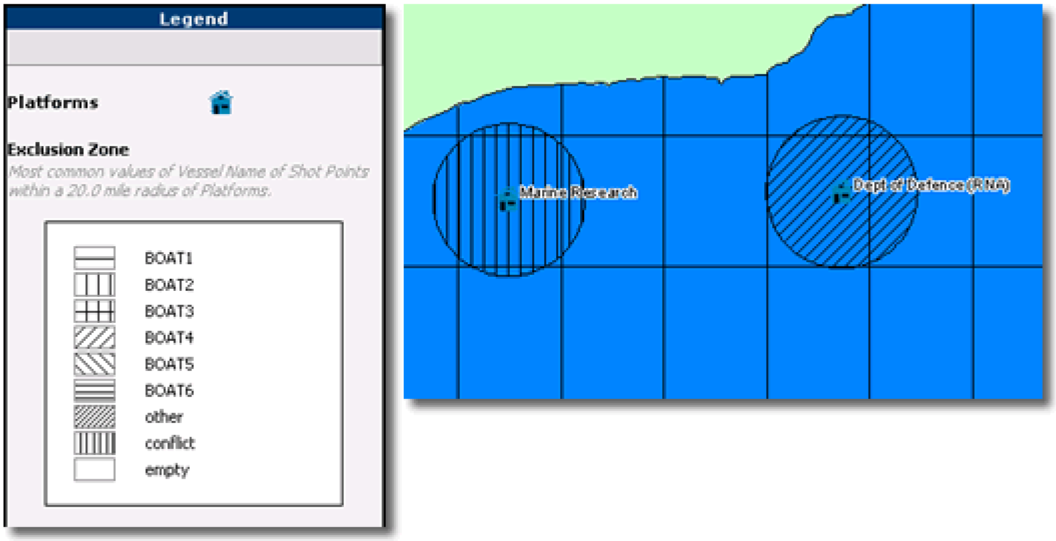


Figure 112. Radius Relationship Layer Map View and Legend showing Hatch Theme (String – Hatch).

This completes all the theme options for relationship layers.

TO TEST YOUR SETTINGS

➢ ***To test the Relationship Layer configuration***

1. On the Main Menu, click Test. A browser opens displaying the layer configuration. The new layer is added on the relationship layer list in the Layer Directory.

SAVING THE LAYER

➢ ***To save the Relationship Layer configuration***

1. On the Main Menu, click Save to save the layer settings. The Layer will be saved and listed in the **Layer Directory** to the right of the screen.

Note Clicking the **Save** button saves all the changes made to all configuration screens. Note that saved layers are added to the layer list in the Layer Directory.

EDITING A LAYER

➢ ***To edit a Relationship Layer configuration***

1. On the Layer Directory, expand the **Relationship Layers** to view the relationship layer list.

2. Click the **Relationship Layer** to edit. The layer configuration screen displays for editing.

3. On the Main Menu, click Save.

Note Clicking the **Save** button saves all the changes made to all configuration screens.

COPYING A LAYER

➤ *To copy a Relationship Layer*

1. On the Layer Directory, expand the **Relationship Layers** folder to view the relationship layer list.

2. Click the **Relationship Layer** to copy. The layer configuration displays.

3. On the Main Menu, click Copy. The copied layer configuration displays.

4. On the **Layer Name** field, type the title of the layer.

5. Click Save to save the settings. The new layer appears on the Layer Directory.

Note Clicking the **Save** button saves all the changes made to all configuration screens.

DELETING A LAYER

➤ *To delete a Relationship Layer*

1. On the Layer Directory, expand the **Relationship Layers** folder to view the relationship layer list.

2. Click the **Relationship Layer** to delete. The layer configuration displays.

3. On the Main Menu, click Delete.

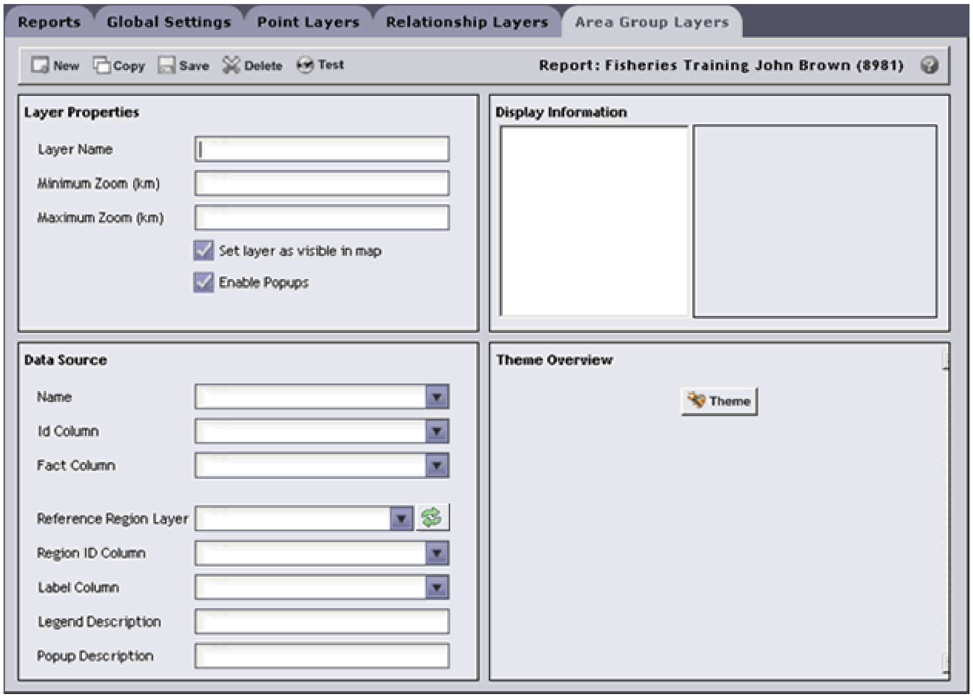
4. Click Save.

Note Clicking the **Save** button saves all the changes made to all configuration screens.
Note on Data Format
Map Intelligence, by default, places commas in numbers greater than 999. The format can be changed by specifying the column format in the universe. This only applies to columns with numeric values.

CONFIGURE AREA GROUP LAYERS

➢ ***To open the Area Group Layer configuration screen***

1. Click **Area Group Layers**. The *Area Group Layer* configuration screen displays.
2. Click **New**. The fields are cleared for new input.



Report: Fisheries Training John Brown (8981)

☑ Set layer as visible in map

☑ Enable Popups

Figure 113. Area Group Layer configuration screen.

LAYER PROPERTIES SECTION

➢ ***To configure the Layer Properties section***

1. On the **Layer Name** field, type a title for the layer.

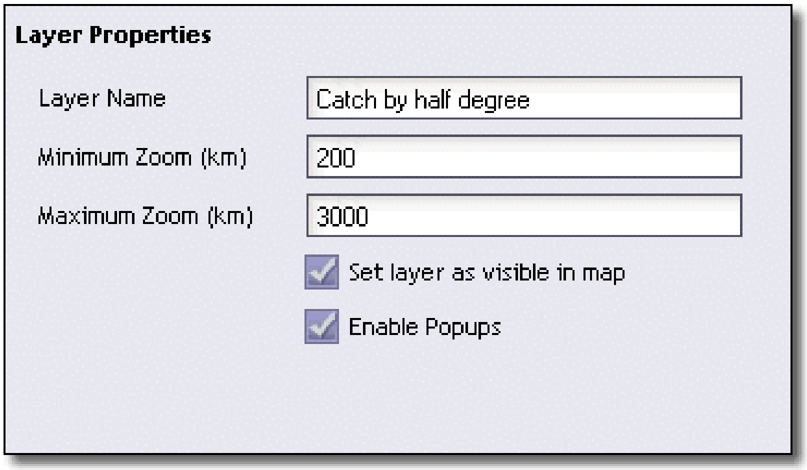
2. Specify the range in which the layer will be visible on the map by entering a **Minimum Zoom** and **Maximum Zoom** value. The layer is visible if the current map width is within the specified minimum and maximum value.

3. Select the **Set Layer as Visible in Map** checkbox to make the layer visible on the initial access of the Mapping Viewer.

4. Select the **Enable Popups** checkbox to enable information pop-ups on the initial access of the Mapping Viewer.

Note

Information Popup provides further information about a region when you move your mouse over the region on the map. *See the following figure.*



Layer Properties

Layer Name: Catch by half degree

Minimum Zoom (km): 200

Maximum Zoom (km): 3000

☑ Set layer as visible in map

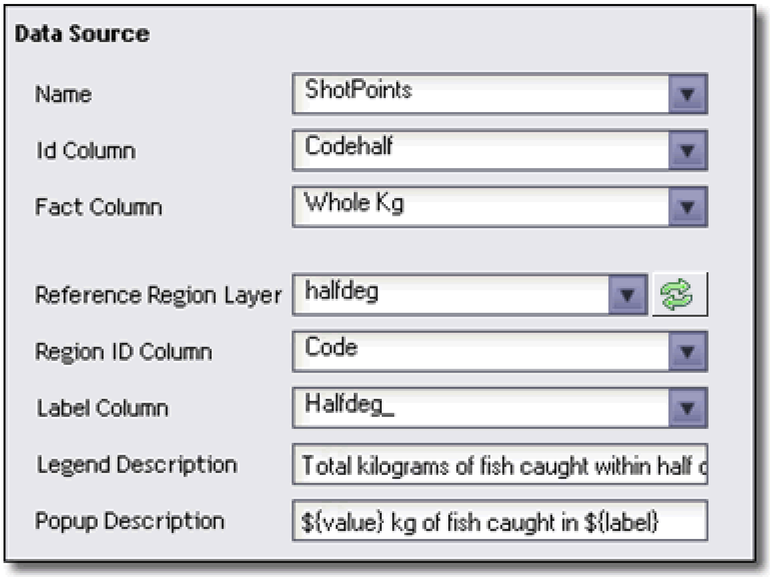
☑ Enable Popups

Figure 114. Layer Properties section.

DATA SOURCE SECTION

➤ *To configure the Data Source section*

The **Data Source** section allows the configuration of the necessary data source settings for the layer.



Data Source

Name: ShotPoints

Id Column: Codehalf

Fact Column: Whole Kg

Reference Region Layer: halfdeg

Region ID Column: Code

Label Column: Halfdeg_

Legend Description: Total kilograms of fish caught within half d

Popup Description: ${value} kg of fish caught in ${label}

Figure 115. Data Source section.

1. On the **Name** drop-down list, select the data source to be used for this layer.

> Note **Area Group** layers require a join between a column in the data source and a column in the built-in map layer to shade. Matching values are required from these two columns for the Area Group layer to work.

2. On the **ID Column** drop-down list, select the column from the data source that corresponds to the column in the built-in map layer (Region ID Column).

3. On the **Fact Column** drop-down list, select the column that contains the values to be measured for this layer.

Note For numeric aggregation, you do not need to specify a fact column when using the Count function.

4. On the **Reference Region Layer** drop-down list, select the built-in map layer to shade or apply a color to.

Note

- To refresh the **Reference Region Layer** drop-down list, click 🔄.
- Only layers containing regions can be used as reference layers.
- Built-in layers are arranged in a particular order on the map. When selecting a built-in layer to shade, all map layers that sit under the selected layer are covered by the selected color or hatch.

5. On the **Region ID Column** field, specify the built-in map layer column that contains values that match the ones in the specified **ID Column**.

6. On the **Label Column** drop-down list, select the column in the map layer that contains the values to be used as labels for the regions.

Note *Map Intelligence* IGP users: Labels will not be visible if the server setting *Show Region Built-in Label* has been set to *No*. Refer to the *Settings* section of the *Map Intelligence Server Tools and Administration Guide*

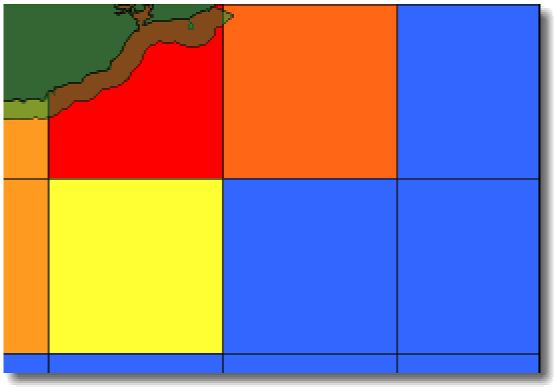


Figure 116. When no Label column has been selected, no labels appear on the map.

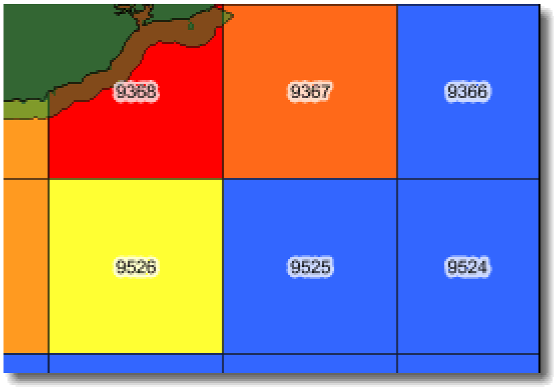
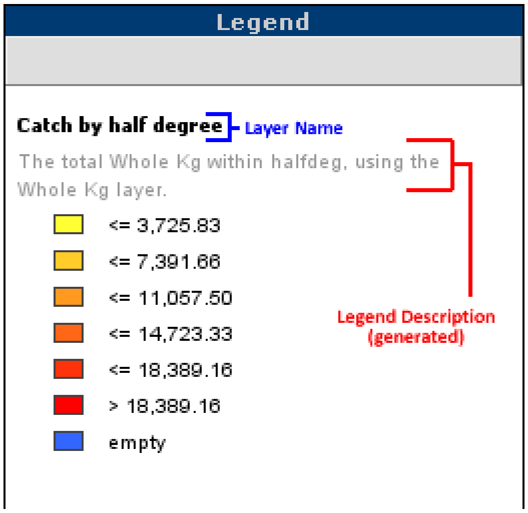


Figure 117. In this example the *half degree* column label was selected, now each half degree grid square on the map displays its code number label.

7. On the **Legend Description** field, type a description for the legend of this layer. If this field is left blank, *Map Intelligence* automatically assigns a description.



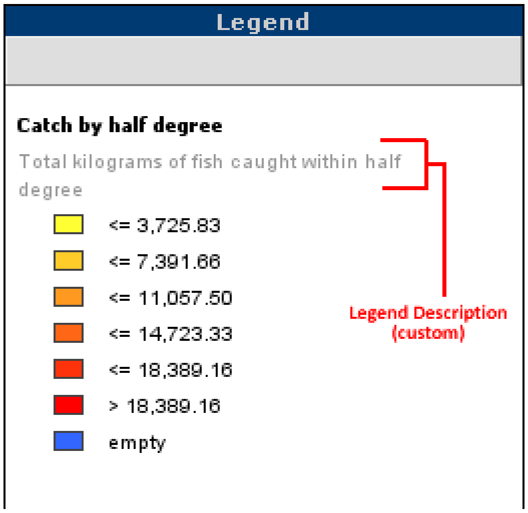
Legend

Catch by half degree

The total Whole Kg within halfdeg, using the Whole Kg layer.

🟨 <= 3,725.83
🟨 <= 7,391.66
🟧 <= 11,057.50
🟧 <= 14,723.33
🟥 <= 18,389.16
🟥 > 18,389.16
🟦 empty

Figure 118. Legend showing a Map Intelligence generated description.



Legend

Catch by half degree

Total kilograms of fish caught within half degree

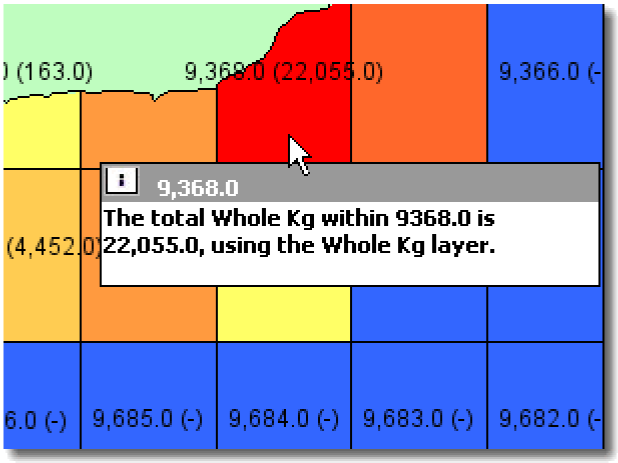
🟨 <= 3,725.83
🟨 <= 7,391.66
🟧 <= 11,057.50
🟧 <= 14,723.33
🟥 <= 18,389.16
🟥 > 18,389.16
🟦 empty

Figure 119. Legend showing a customized description

8. On the **Popup Description** field, type a description for the *Information Popups* of this layer. The **Popup Description** describes each region of the layer and may contain any of the following parameters:

${label}	Will be replaced with the label for the region.
${value}	${value} will be replaced with the value of the column you selected as the **Fact Column** (see Fact Column above).
${ColumnName}	Replace `ColumnName` with the name of a column selected in **Display Information** (see **Error! Not a valid result for table.** section of the Area Group Layer configuration screen). The value of this column will be displayed in the popup description for the region.
Example	${value} items in ${label}

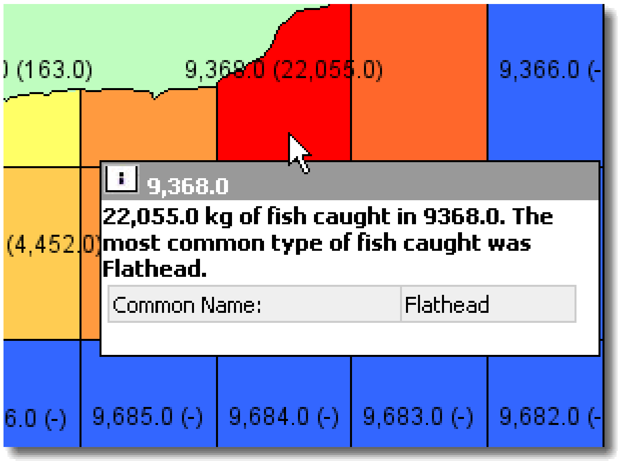
If this field is left blank a description will be generated by Map Intelligence.



9,368.0

The total Whole Kg within 9368.0 is 22,055.0, using the Whole Kg layer.

Figure 120. Information popup displaying a Map Intelligence generated Popup description



9,368.0

22,055.0 kg of fish caught in 9368.0. The most common type of fish caught was Flathead.

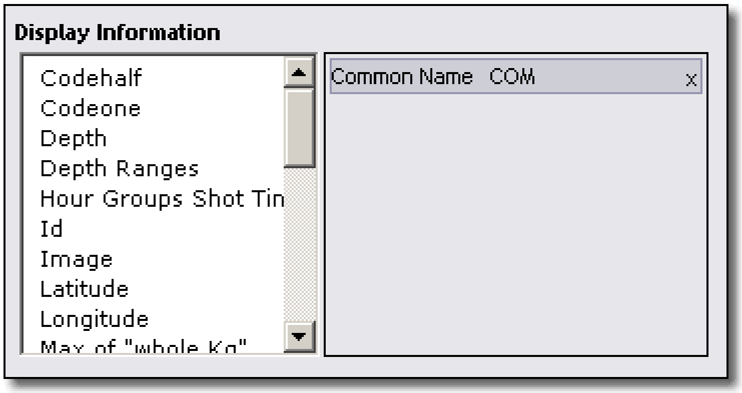
Common Name:	Flathead

Figure 121. Customized Popup description. In this example the following description was entered into the Popup Description text box.

${value} kg of fish caught in ${label}. The most common type of fish caught was ${Common Name}.

DISPLAY INFORMATION SECTION

The Display Information section shows a list of data columns, these columns can be specified as display columns to be included as additional information in the Information pop-up box. Each column has an associated aggregation function.



Common Name COM

Figure 122. Display Information Section

> ***To configure the Display Information section***

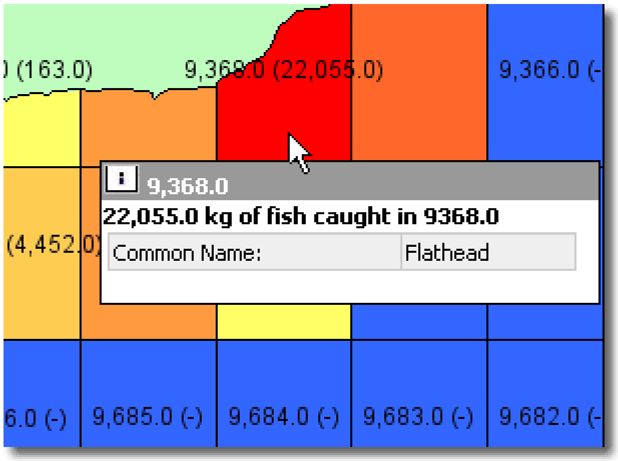
1. Select a data column from the list. On selection, a drop-down list appears displaying a list of aggregation functions.

2. Select an aggregation function. The selected data column displays in the box on the right.

3. Repeat steps 1 and 2 to add further data columns.

4. To deselect a data column, click the ☒ next to the selected data column name.

The example shown in the preceding figure, shows the result of adding the Common Name data column. On the *Information* popup box, it can be seen that the most common fish caught in the grid area 9368.0 was Flathead.



9,368.0

22,055.0 kg of fish caught in 9368.0

Common Name:	Flathead

Figure 123. Example of Information Popup box with additional data column information.

CREATING THEMES FOR AREA GROUP LAYERS

Creating themes for Area Group Layers require you to specify threshold conditions based on a Numeric or String aggregation using the *Theme Builder Wizard* on the *Area Group Layer* configuration screen.

NUMERIC AGGREGATION LAYERS

Map Intelligence allows the application of function on values from a specified column. The specified built-in map layer is shaded according to the resulting values. The available numeric functions are: *Count*, *Sum*, *Min*, *Max*, *Mean* and *Median*.

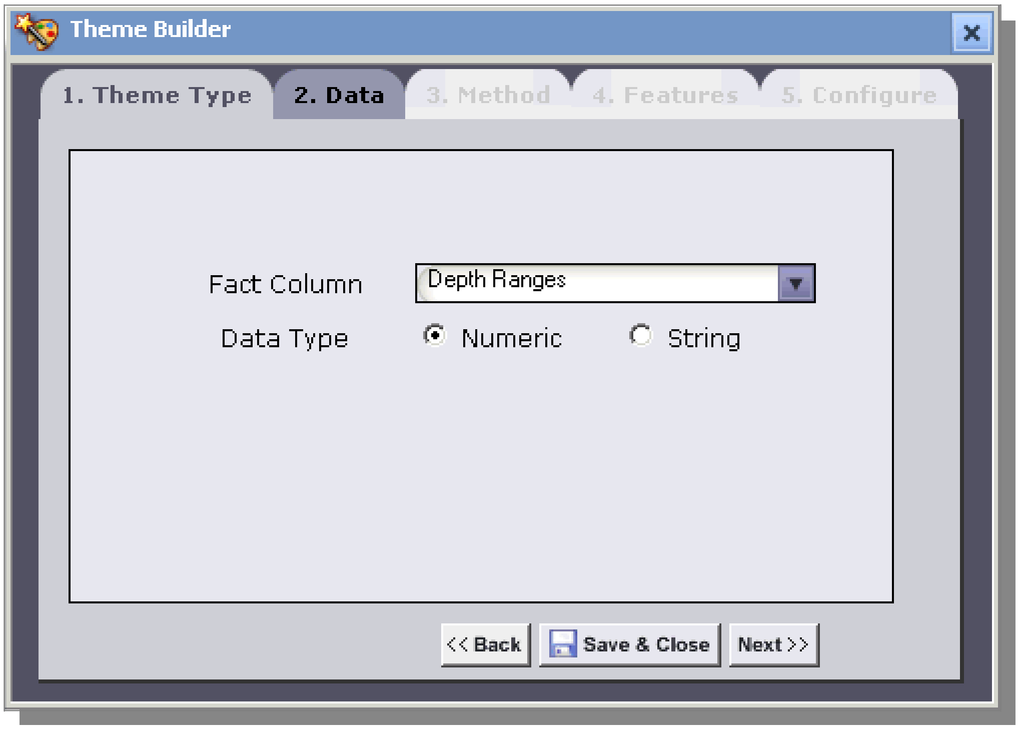
➢ *Creating a theme based on a Numeric Aggregation*

1. Click Theme. The *Theme Builder Wizard* displays with the **Theme Type** tab open by default.

2. The **Fact Column** drop down list displays the previously selected column on the *Area Group Layer* configuration screen. *To change the column*, select another column from the **Fact Column** drop-down list.

   Note: Any changes to the Fact Column through the *Theme Builder Wizard* are reflected on the Fact Column field of the *Area Group Layer* configuration screen.

3. On the **Data Type** options, select the **Numeric** radio button.



Fact Column: Depth Ranges

Data Type: ● Numeric ○ String

Figure 124. Theme Builder Wizard: Theme Type Tab (Numeric).

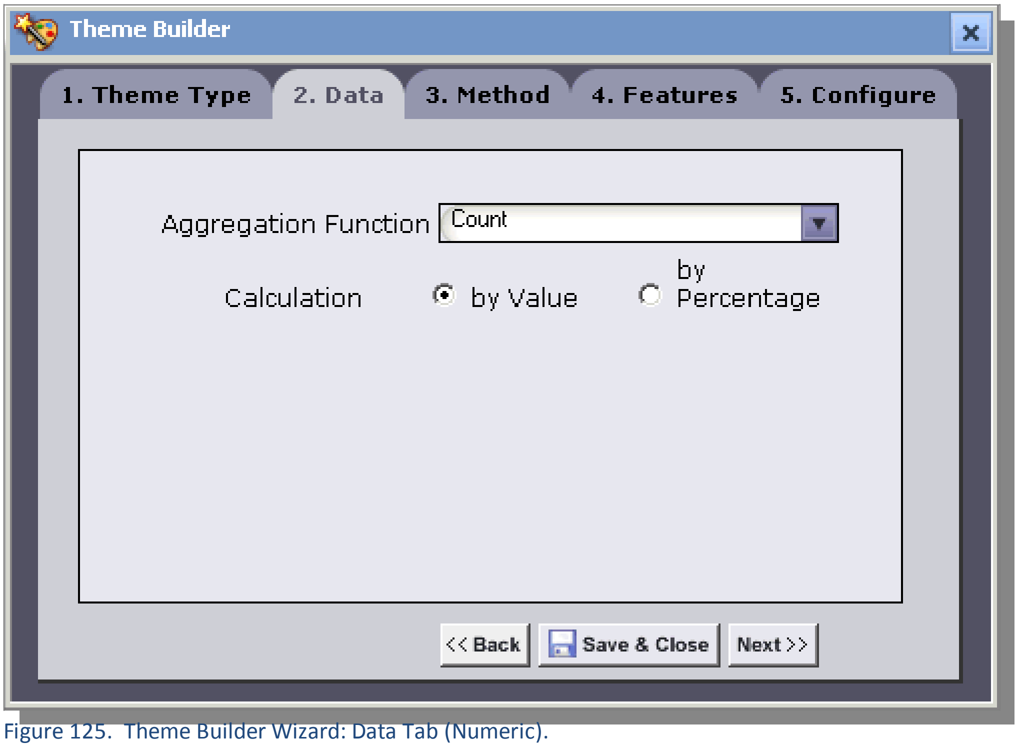
4. Click the **Data** tab or the **Next** button. The **Data** tab opens.

5. On the **Aggregation Function** drop-down list, select the function to use for the layer. The available numeric functions are: *Count*, *Sum*, *Min*, *Max*, *Mean* and *Median*.

6. For the **Calculation** option, click either the by **Value** or by **Percentage** radio button.

Note

Note that only one color and one hatch layer can be displayed simultaneously for a particular built-in-layer. If you have multiple layers that use the same built-in layer, you can switch between these using the **Theme Select** option from the Mapping Viewer (refer to the *Map Intelligence Mapping Viewer User Manual*



Aggregation Function: Count

Calculation ● by Value ○ by Percentage

Figure 125. Theme Builder Wizard: Data Tab (Numeric).

7. Click the **Method** tab or the **Next** button. The **Method** tab opens.

8. On the **Theme Method** options, select mode of applying themes.

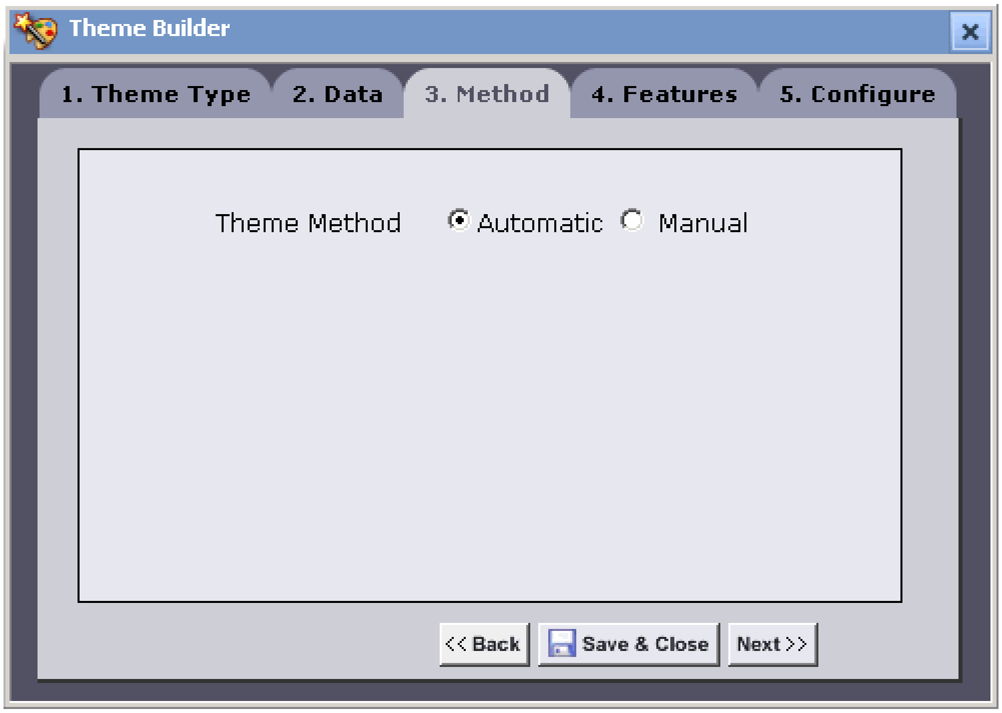
Note

There are two (2) methods for applying themes:

- Automatic
- Manual

AUTOMATIC METHOD

1. On the **Theme Method** options, click the **Automatic** radio button.



Theme Method ● Automatic ○ Manual

Figure 126. Theme Builder Wizard: Method Tab (Numeric- Automatic).

2. Click the **Features** tab or the **Next** button. The **Features** tab opens.

3. On the **Scheme** drop-down list, select a classification scheme.

Note

The standard classification scheme can be used to group similar values in looking for patterns in the data. There are three (3) schemes for grouping data values into classes based on how the data values are distributed.

- **Equal Interval**: The difference between the high and low values is the same for every class. So, the classification of the data will be based on a set of equal splits. For example, if the lowest value is 0 and the highest value is 10 in the data, and 5 classes are requested, the range of each class will be 0 to 2, 2 to 4, 4 to 6, 6 to 8, 8 to 10
- **Quantile**: Each class contains an equal number of features. In this case, the points are sorted in ascending order (for the chosen data field) and each class is filled with (total number of points)/(number of classes) points starting from the lowest value to the highest.
- **Standard Deviation**: Features are placed in classes based on how much their values vary from the mean. First the mean and standard deviation of the data values are calculated. The class breaks are found by successively adding or subtracting multiples of the standard deviation from the mean.

4. On the **Class Count** drop-down list, select the number of colors to appear in the shading range.

Note

- If "*Equal Interval*" scheme is selected, on the **Scale** options, click either the **Linear** or **Logarithmic** radio button.
- If "*Standard Deviation*" scheme is selected, type the multiplying factor on the **Std Deviation Multiplier** field.

5. On the **Visual Feature** options, select the color mode.

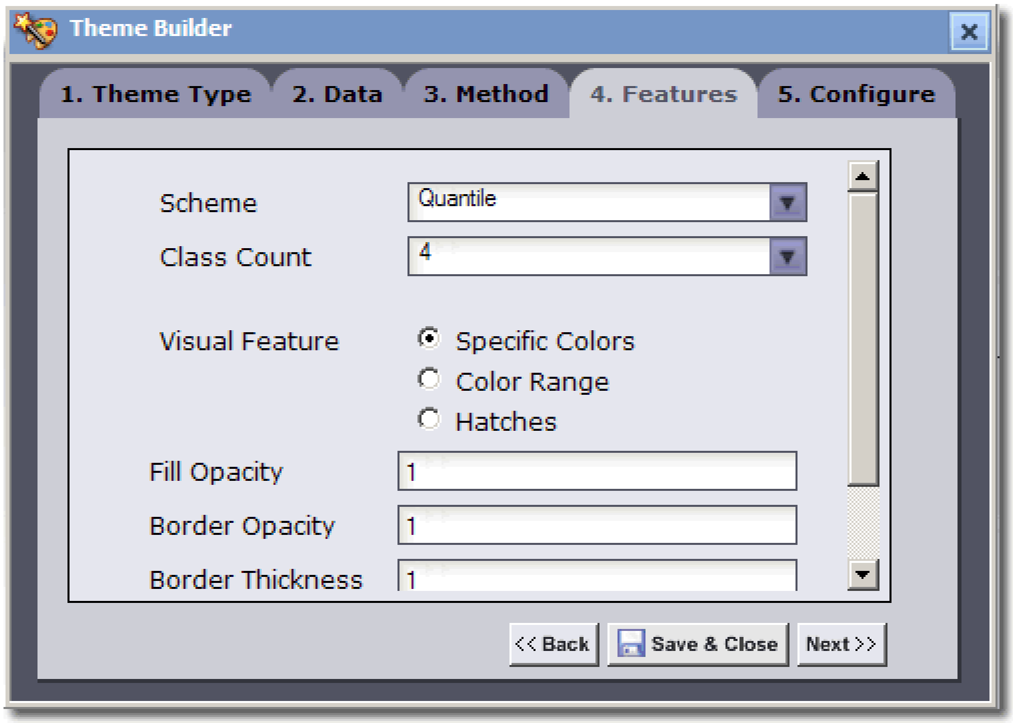
Note

There are three (3) options for selecting the **Visual Feature**.

- **Specific Colors:** use to specify a particular color for each class.
- **Color Range:** use to choose a start and end color.
- **Hatches**. use to specify a particular hatch for each class.

SELECTING SPECIFIC COLORS

1. On the **Visual Feature**, click the **Specific Colors** radio button.



Scheme: Quantile

Class Count: 4

Visual Feature: ● Specific Colors ○ Color Range ○ Hatches

Fill Opacity: 1

Border Opacity: 1

Border Thickness: 1

Figure 127. Theme Builder Wizard: Features Tab (Numeric- Automatic – Specific Colors).

Features Rendering Attributes

2. On the **Fill Opacity** field, enter a number from 0 to 1 to indicate the opacity of the colored regions in the layer.

3. On the **Border Opacity** field, enter a number from 0 to 1 to indicate the opacity of region borders in the layer.

4. On the **Border Thickness** field, enter a number from 0 to 1 to indicate the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.

5. On the **Border Color** field, enter a hexadecimal color value or select a color from the color picker for the region border color. The default color is black (#000000).

6. Click the **Configure** tab or the **Next** button. The **Configure** tab opens.

7. Click the **Class 1** colored rectangle.

8. Select a color from the color picker.

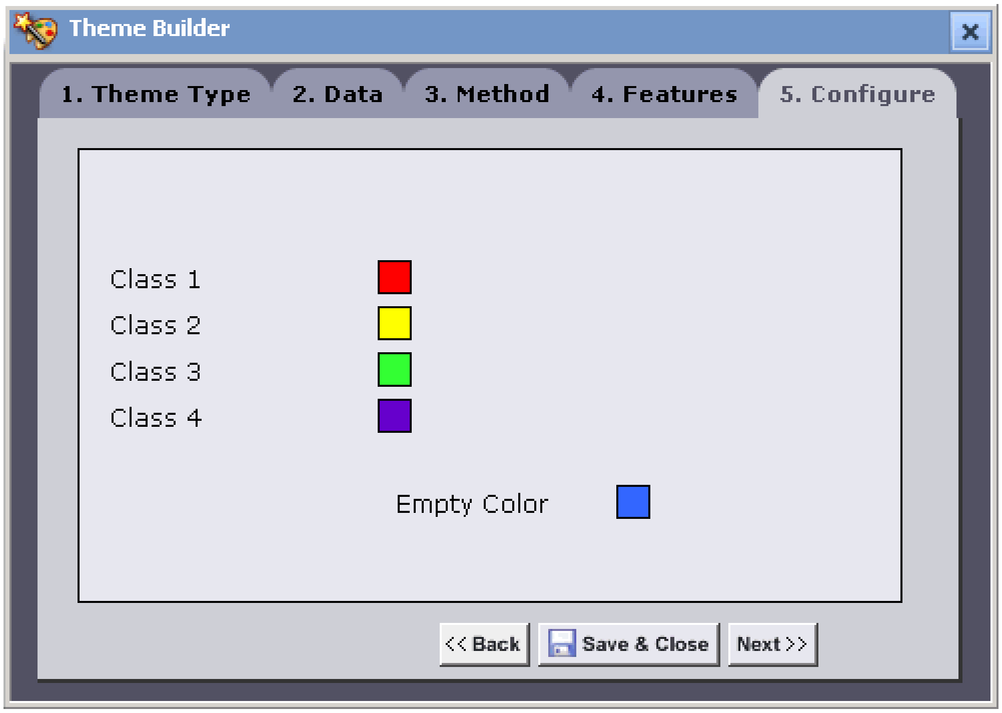
9. Repeat the above steps for each class.

10. Click the **Empty Color** colored rectangle.

11. Select a color to indicate value-less region and click **OK**.

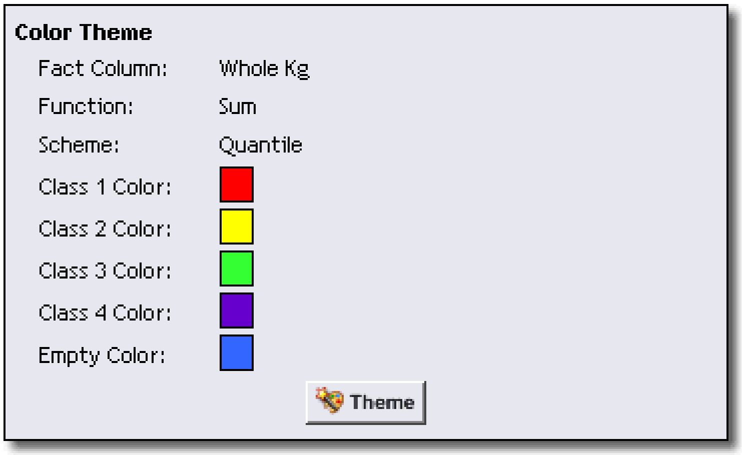
Note The colored rectangles change to the new color after each selection.

Tip If the color picker does not have the preferred color, right-Click the colored rectangle and manually enter the hexadecimal color value.



Theme Builder Wizard: Configure Tab (Numeric- Automatic – Specific Colors).

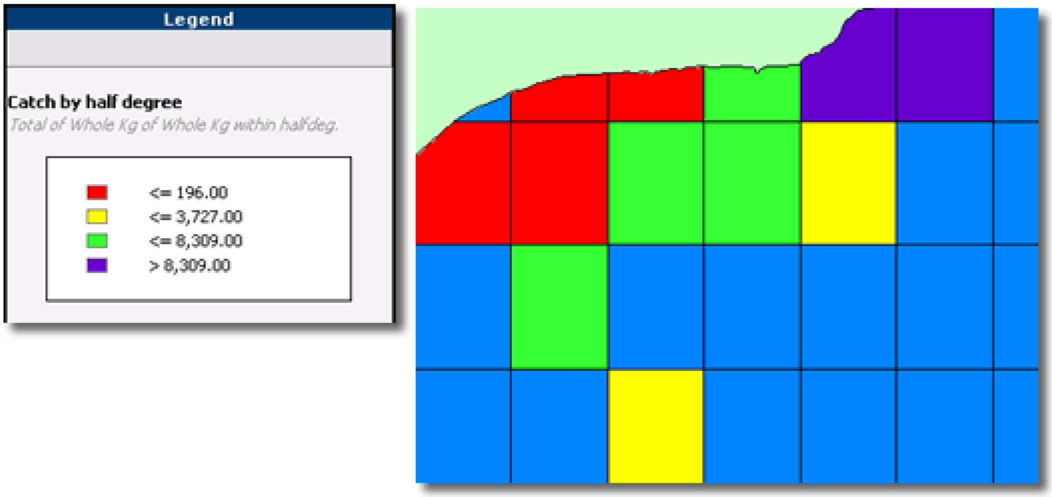
12. Click Save & Close. The *Theme Builder Wizard* closes. The created theme displays in the Color Theme section of the *Area Group Layer* configuration screen.



Color Theme

Fact Column:	Whole Kg
Function:	Sum
Scheme:	Quantile
Class 1 Color:	🟥
Class 2 Color:	🟨
Class 3 Color:	🟩
Class 4 Color:	🟪
Empty Color:	🟦

Figure 128. Themes Section showing Specific Color Theme.



Catch by half degree

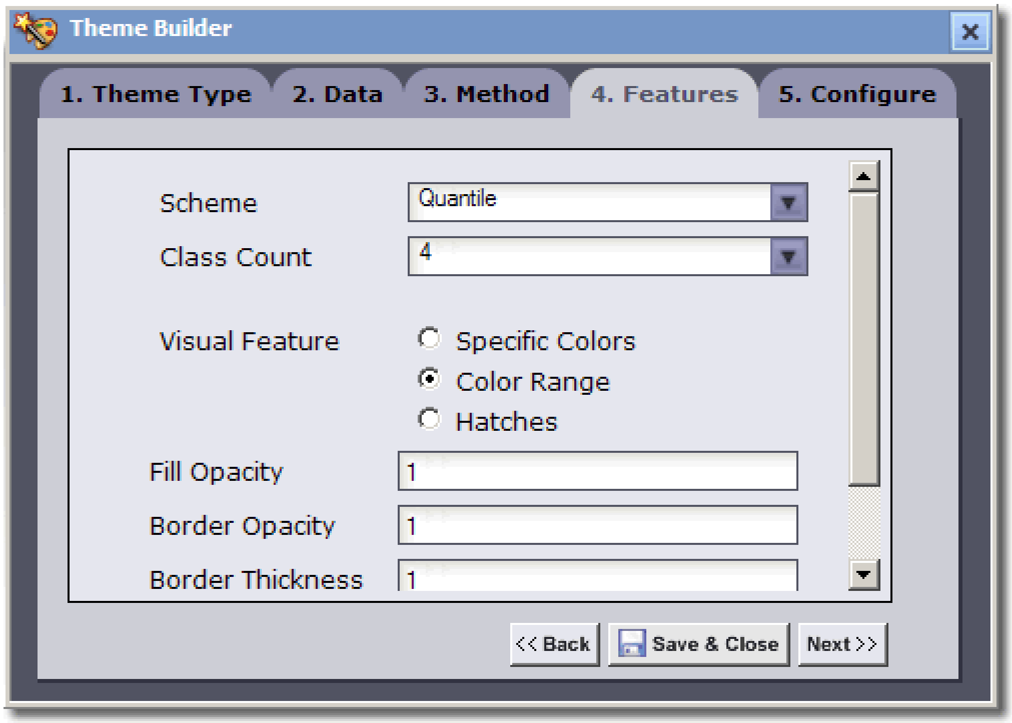
Total of Whole Kg of Whole Kg within halfdeg.

🟥	<= 196.00
🟨	<= 3,727.00
🟩	<= 8,309.00
🟪	> 8,309.00

Figure 129. Area Group Layer Map View and Legend showing Specific Color Theme.

SELECTING COLOR RANGE

1. On the **Visual Feature** options, click the **Color Range** radio button.



Scheme: Quantile

Class Count: 4

Visual Feature: ○ Specific Colors ● Color Range ○ Hatches

Fill Opacity: 1

Border Opacity: 1

Border Thickness: 1

Figure 130. Theme Builder Wizard: Features Tab (Numeric- Automatic – Color Range).

Features Rendering Attributes

2. On the **Fill Opacity** field, enter a number from 0 to 1 to indicate the opacity of the colored regions in the layer.

3. On the **Border Opacity** field, enter a number from 0 to 1 to indicate the opacity of region borders in the layer.

4. On the **Border Thickness** field, enter a number from 0 to 1 to indicate the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.

5. On the **Border Color** field, enter a hexadecimal color value or select a color from the color picker for the region border color. The default color is black (#000000).

6. Click the **Configure** tab or the **Next** button. The **Configure** tab opens.

7. Click the **Start Color** colored rectangle.

8. Select the start color from the color picker and click **OK**.

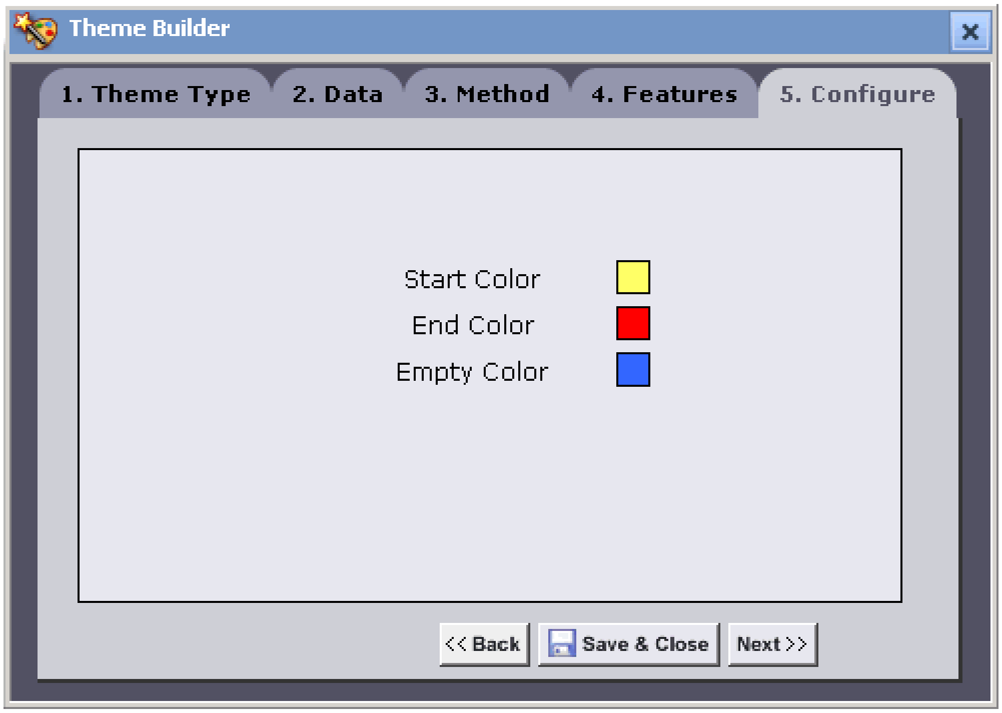
9. Click the **End Color** colored rectangle.

10. Select the end color from the color window and click **OK**.
11. Click the **Empty Color** colored rectangle.

12. Select a color to indicate value-less region and click **OK**.

Note The colored rectangles will change to the new color chosen after each selection.

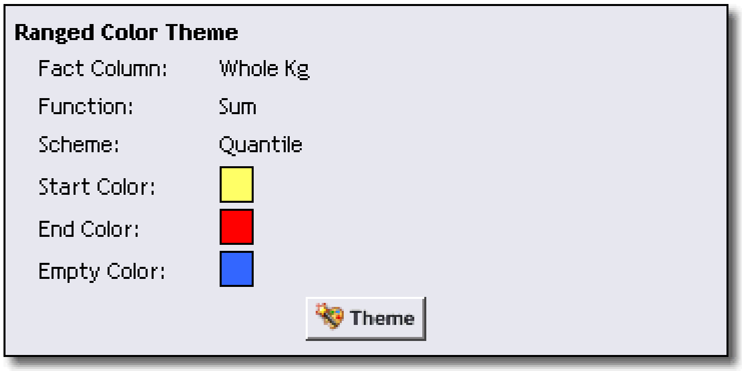
Tip If the color picker does not have the preferred color, right-Click the colored rectangle and manually enter the hexadecimal color value.



Start Color	🟨
End Color	🟥
Empty Color	🟦

Figure 131. Theme Builder Wizard: Configure Tab (Numeric- Automatic – Color Range).

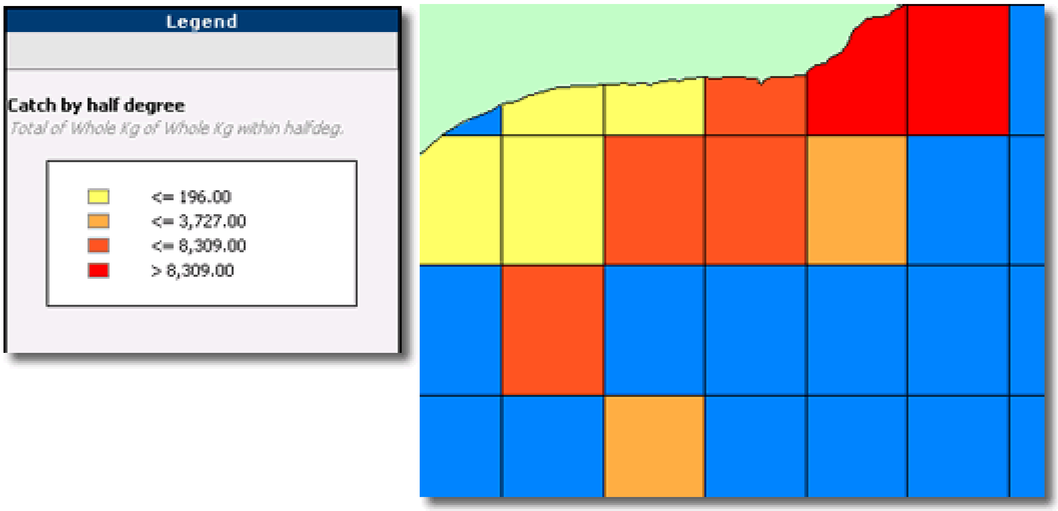
13. Click Save & Close. The *Theme Builder Wizard* closes. The created theme displays in the Theme Section of the *Area Group Layer* configuration screen.



Ranged Color Theme

Fact Column:	Whole Kg
Function:	Sum
Scheme:	Quantile
Start Color:	🟨
End Color:	🟥
Empty Color:	🟦

Figure 132. Themes Section showing Ranged Color Theme.



Legend

Catch by half degree

Total of Whole Kg of Whole Kg within halfdeg.

🟨 <= 196.00

🟧 <= 3,727.00

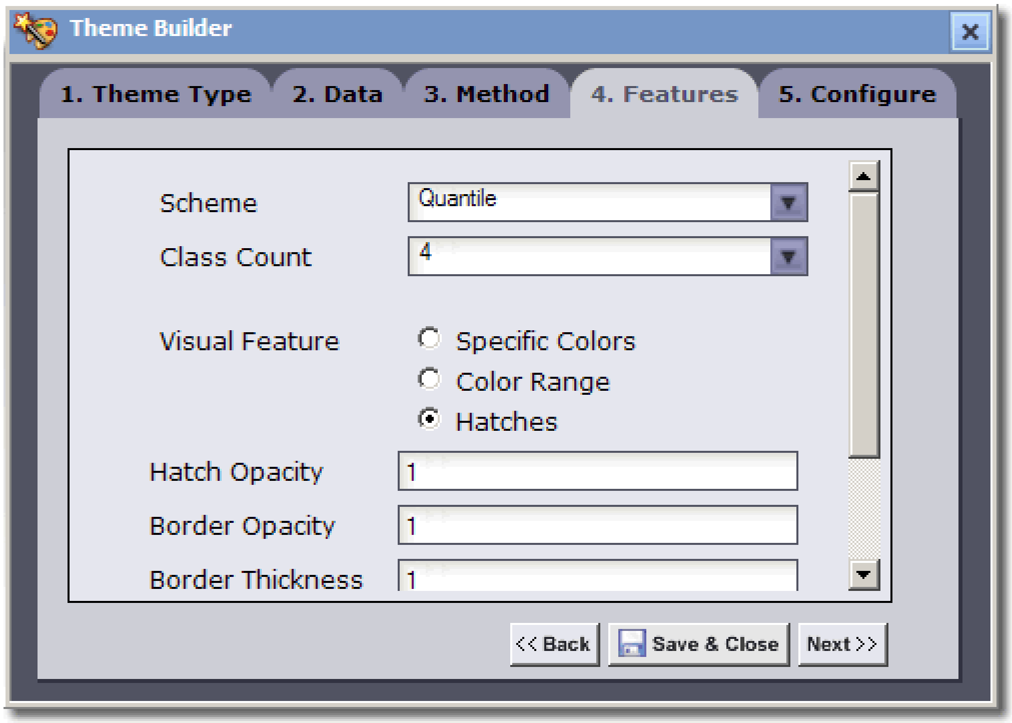
🟧 <= 8,309.00

🟥 > 8,309.00

Figure 133. Area Group Layer Map View and Legend showing Ranged Color Theme.

SELECTING HATCHES

1. On the **Visual Feature** options, click the **Hatches** radio button.



Scheme: Quantile

Class Count: 4

Visual Feature: ○ Specific Colors ○ Color Range ● Hatches

Hatch Opacity: 1

Border Opacity: 1

Border Thickness: 1

Figure 134. Theme Builder Wizard: Features Tab (Numeric- Automatic – Hatches).

Features Rendering Attributes

2. On the **Hatch Opacity** field, enter a number from 0 to 1 to indicate the opacity of the hatches.

3. On the **Border Opacity** field, enter a number from 0 to 1 to indicate the opacity of region borders in the layer.

4. On the **Border Thickness** field, enter a number from 0 to 1 to indicate the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.

5. On the **Border Color** field, enter the hexadecimal color value or select a color from the color picker for the region border color. The default color is black (#000000).

6. On the **Hatch Color** field, enter a hexadecimal color value or select a color from the color picker for the hatch color. The default color is black (#000000).

7. Click the **Configure** tab or the **Next** button. The **Configure** tab opens.

8. Click the **Class 1** hatched rectangle.

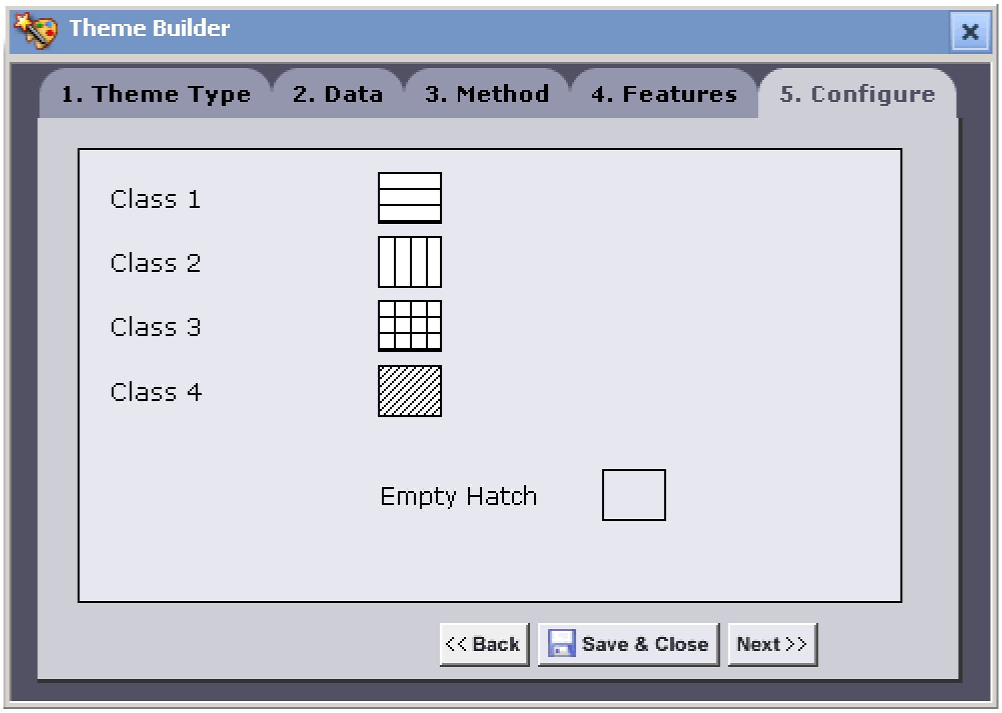
9. Select a hatch from the picker.

10. Repeat the above steps for each class.

11. Click the **Empty Hatch** hatched rectangle.

12. Select a hatch to indicate value-less region and click **OK**.

Note The hatched rectangles change to the new hatch after each selection.



Theme Builder

Class 1

Class 2

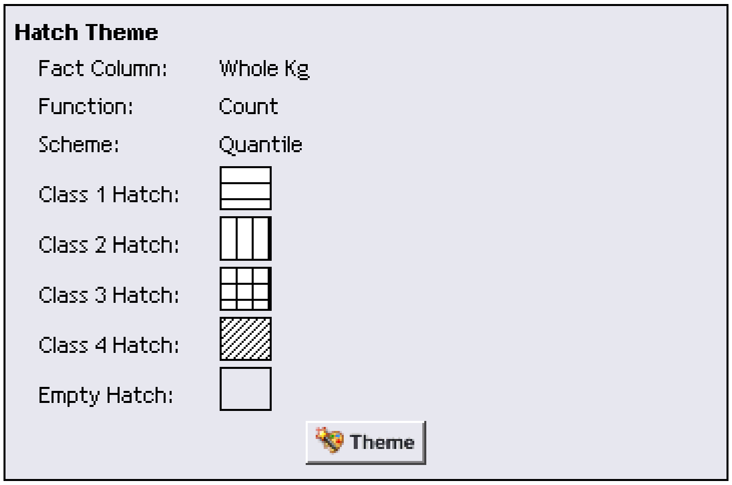
Class 3

Class 4

Empty Hatch

Figure 135. Theme Builder Wizard: Configure Tab (Numeric- Automatic – Hatches).

13. Click Save & Close. The *Theme Builder Wizard* closes. The created theme displays in the Hatch Theme Section of the *Area Group Layer* configuration screen.



Hatch Theme

Fact Column: Whole Kg

Function: Count

Scheme: Quantile

Class 1 Hatch:

Class 2 Hatch:

Class 3 Hatch:

Class 4 Hatch:

Empty Hatch:

Figure 136. Themes Section showing Hatched Theme.

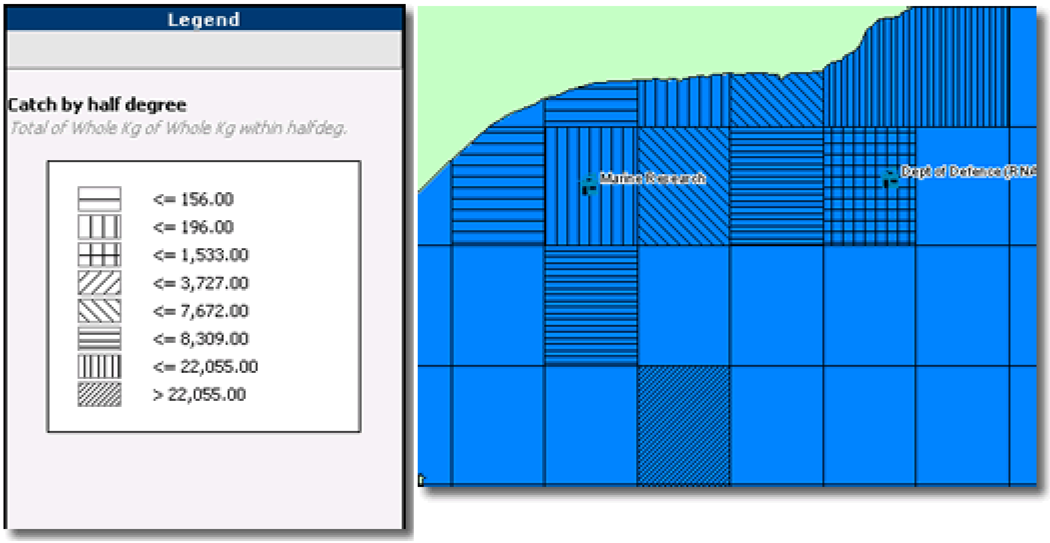
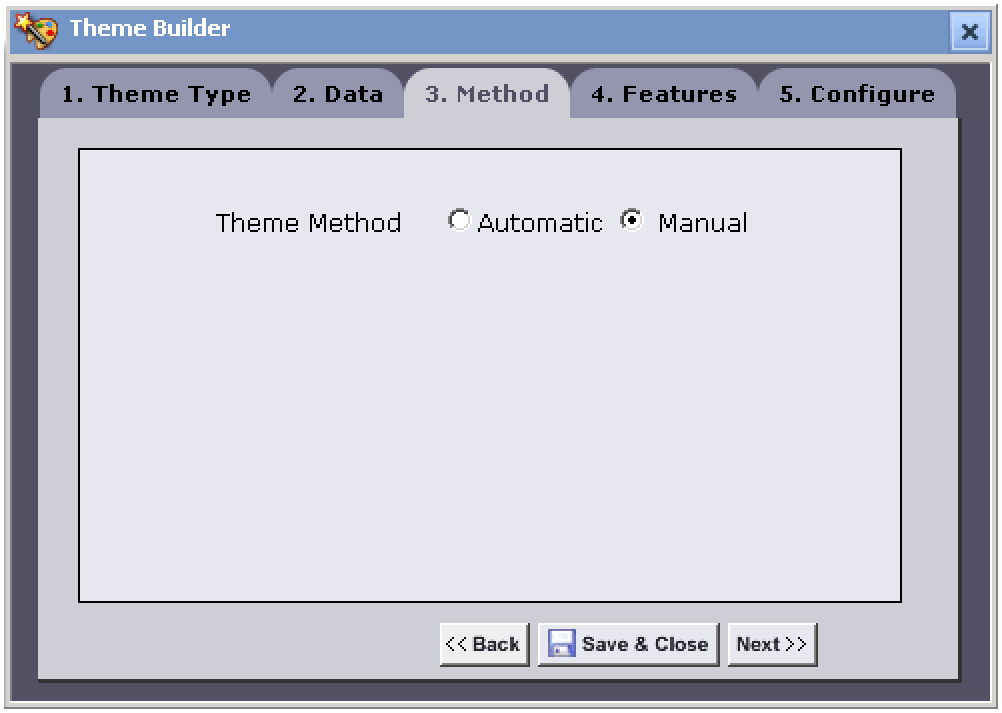


Figure 137. Area Group Layer Map View and Legend showing Hatched Theme.

MANUAL METHOD

1. On the **Method** tab, click the **Manual** radio button.



Theme Method ○ Automatic ● Manual

Figure 138. Theme Builder Wizard: Method Tab (Numeric-Manual).

2. Click the **Features** tab or the **Next** button. The **Features** tab opens.

3. On the **Visual Feature** options, select the color mode.

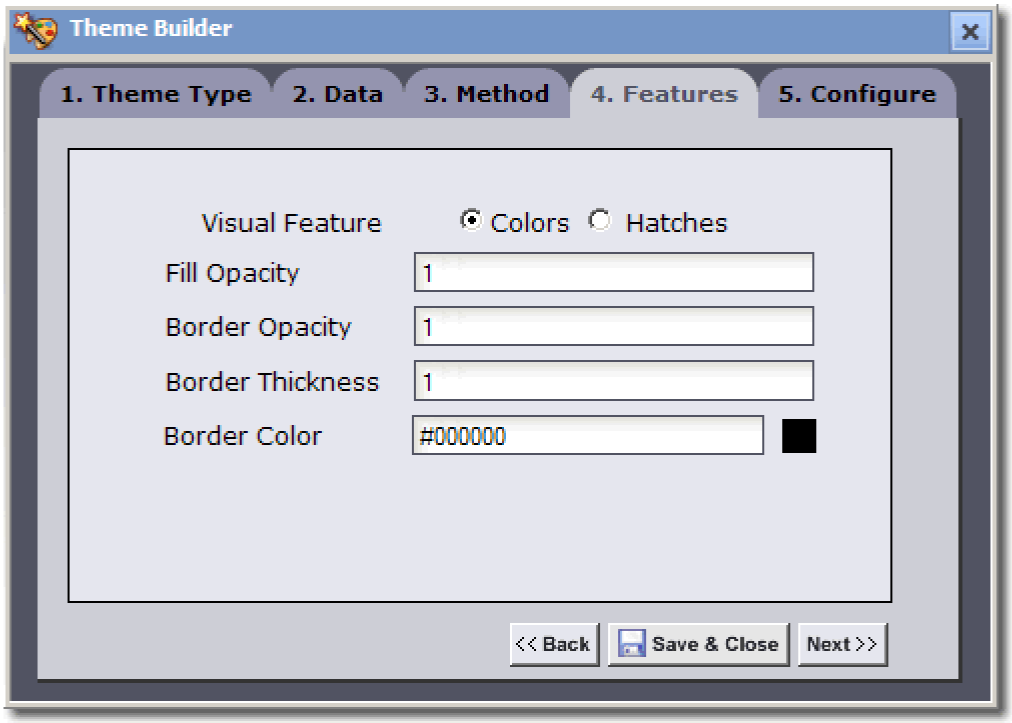
Note

The are two (2) options for selecting the **Visual Feature**.

- **Colors:** use to specify a particular color.
- **Hatches**. Use to specify a particular hatch.

SELECTING COLORS

1. On the **Visual Feature** options, click the **Colors** radio button.



Visual Feature ● Colors ○ Hatches

Fill Opacity 1

Border Opacity 1

Border Thickness 1

Border Color #000000 ■

Figure 139. Theme Builder Wizard: Features Tab (Numeric-Manual-Colors).

Features Rendering Attributes

2. On the **Fill Opacity** field, enter a number from 0 to 1 to indicate the opacity of the colored regions in the layer.

3. On the **Border Opacity** field, enter a number from 0 to 1 to indicate the opacity of region borders in the layer.

4. On the **Border Thickness** field, enter a number from 0 to 1 to indicate the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.

5. On the **Border Color** field, enter a hexadecimal color value or select a color from the color picker for the region border color. The default color is black (#000000).

6. Click the **Configure** tab or the **Next** button. The **Configure** tab opens.
7. Enter a threshold value in the top field.

8. Click the rectangle next to the field.

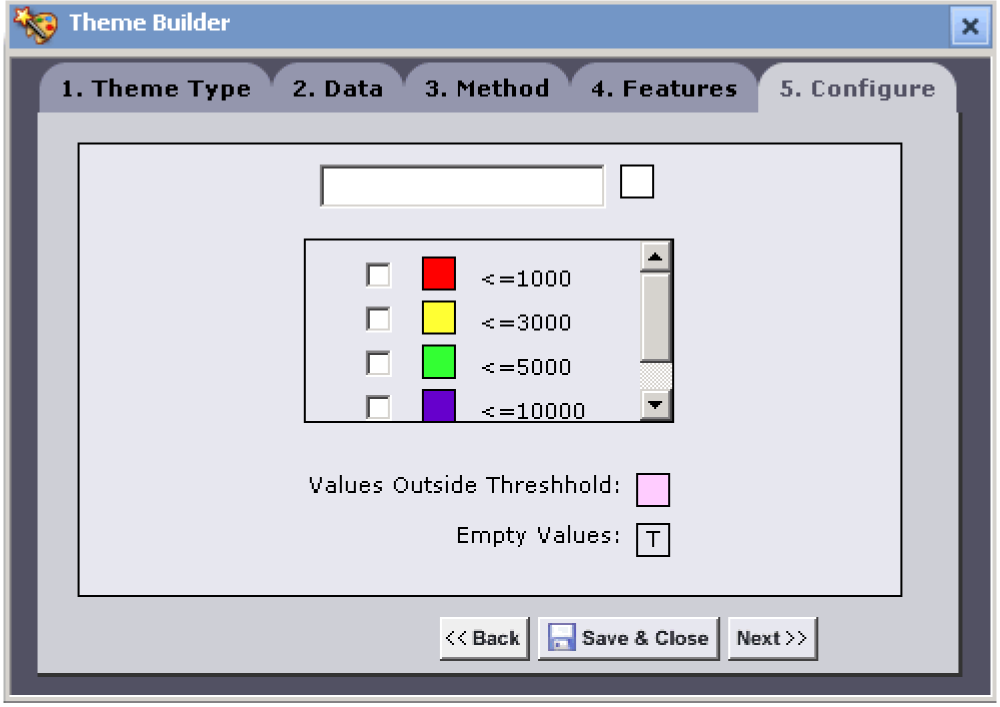
9. Select a color from the color picker to represent the threshold value. The selected threshold value and associated color displays in the preview window list.

10. Configure all other threshold conditions to associate with a color.

11. Click the **Values Outside Threshold** rectangle, then select a color from the color picker to represent any other values that have not been assigned a specific color.

12. Click the **Empty Values** rectangle, then select a hatch from the picker to represent any value-less region or circle.

13. To delete values assigned to a specific color, in the Preview window list, click the check box next to the value and click **Remove Selected**.



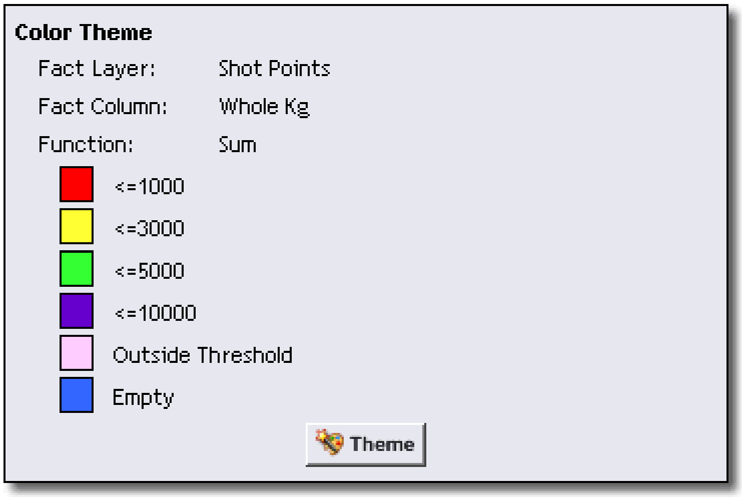
□ 🟥 <=1000
□ 🟨 <=3000
□ 🟩 <=5000
□ 🟪 <=10000

Values Outside Threshhold: □

Empty Values: T

Figure 140. Theme Builder Wizard: Configure Tab (Numeric-Manual-Colors).

14. Click Save & Close. The *Theme Builder Wizard* closes. The created theme displays in the Theme Section of the *Area Group Layer* configuration screen.



Color Theme

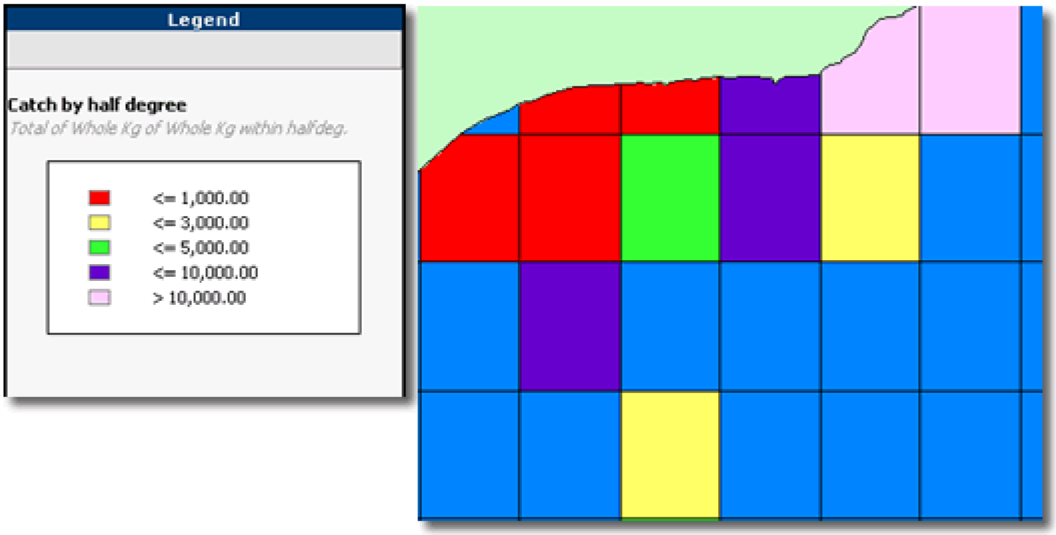
Fact Layer: Shot Points

Fact Column: Whole Kg

Function: Sum

- 🟥 <=1000
- 🟨 <=3000
- 🟩 <=5000
- 🟪 <=10000
- ⬜ Outside Threshold
- 🟦 Empty

Figure 141. Color Themes Section (Numeric-Manual-Colors).



Legend

Catch by half degree

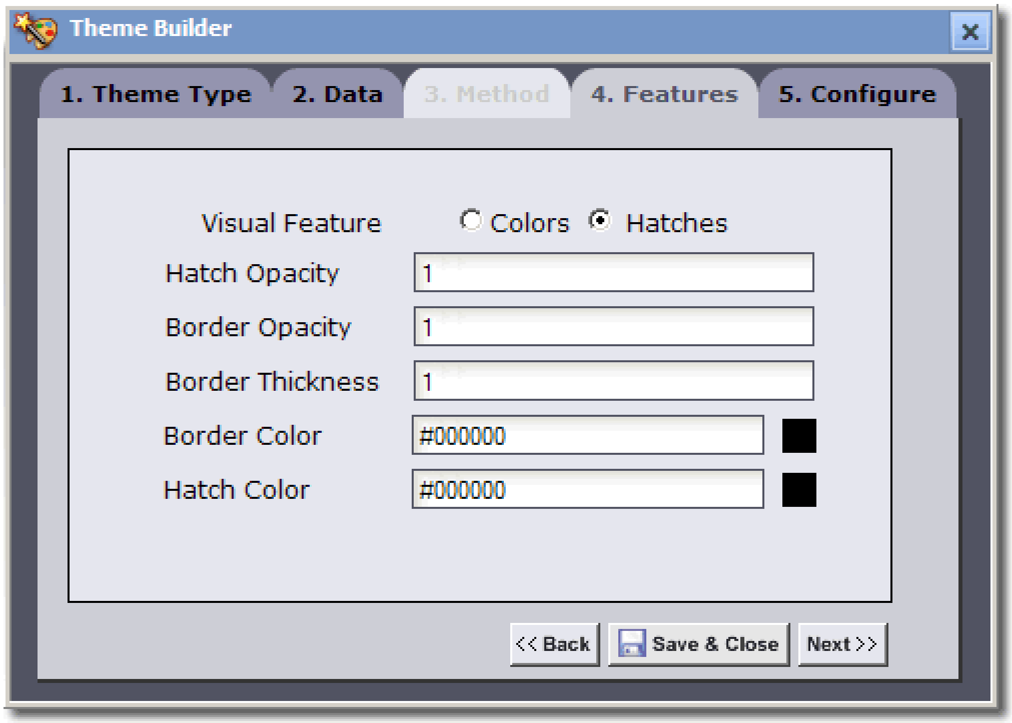
Total of Whole Kg of Whole Kg within halfdeg.

- 🟥 <= 1,000.00
- 🟨 <= 3,000.00
- 🟩 <= 5,000.00
- 🟪 <= 10,000.00
- ⬜ > 10,000.00

Figure 142. Area Group Layer Map View and Legend showing Manual Color Theme.

SELECTING HATCHES

1. On the **Visual Feature** options, click the **Hatches** radio button.



Visual Feature ○ Colors ● Hatches

Hatch Opacity 1

Border Opacity 1

Border Thickness 1

Border Color #000000 ■

Hatch Color #000000 ■

Figure 143. Theme Builder Wizard: Features Tab (Numeric-Manual-Hatches).

Features Rendering Attributes

2. On the **Hatch Opacity** field, enter a number from 0 to 1 to indicate the opacity of the hatches.

3. On the **Border Opacity** field, enter a number from 0 to 1 to indicate the opacity of region borders in the layer.

4. On the **Border Thickness** field, enter a number from 0 to 1 to indicate the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.

5. On the **Border Color** field, enter the hexadecimal color value or select a color from the color picker for the region border color. The default color is black (#000000).

6. On the **Hatch Color** field, enter a hexadecimal color value or select a color from the color picker for the hatch color. The default color is black (#000000).

7. Click the **Configure** tab or the **Next** button. The **Configure** tab opens.

8. Enter a threshold value in the top field.

9. Click the rectangle next to the field.

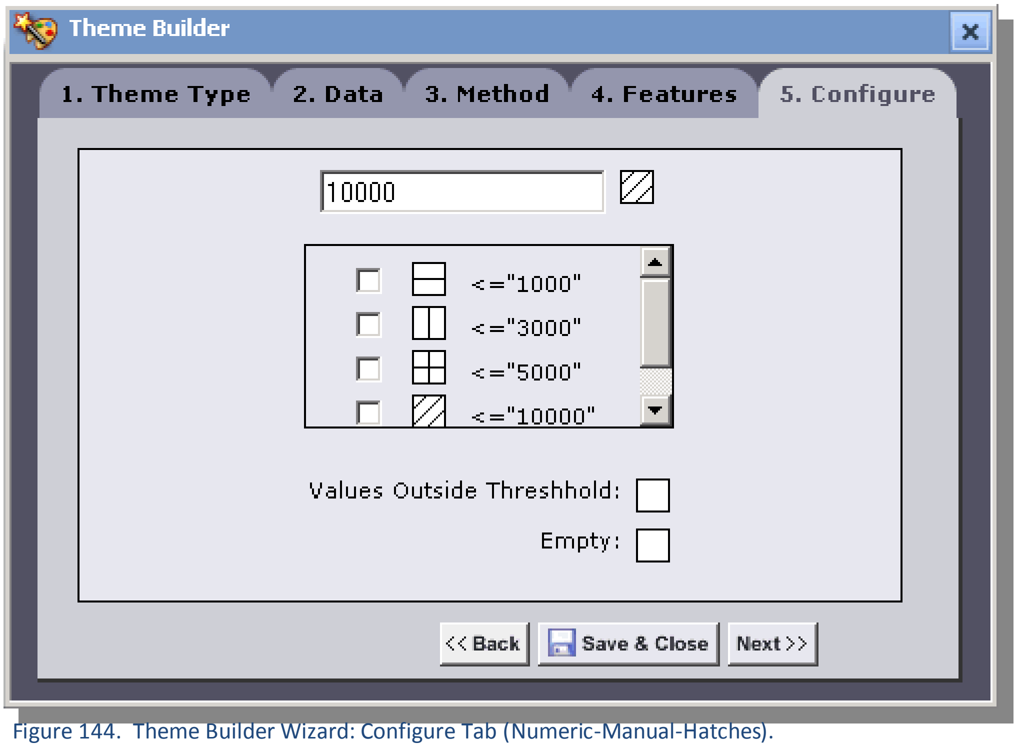
10. Select a hatch from the picker to represent the threshold value. The selected threshold value and associated hatch displays in the preview window list.

11. Configure all other threshold conditions to associate with a hatch.

12. Click the **Values Outside Threshold** rectangle, then select a hatch from the picker to represent any other values that have not been assigned a specific hatch.

13. Click the **Empty Values** rectangle, then select a hatch from the picker to represent any value-less region or circle.

14. To delete values assigned to a specific color, in the Preview window list, click the check box next to the value and click **Remove Selected**.



Theme Builder

1. Theme Type | 2. Data | 3. Method | 4. Features | 5. Configure

10000 ▨

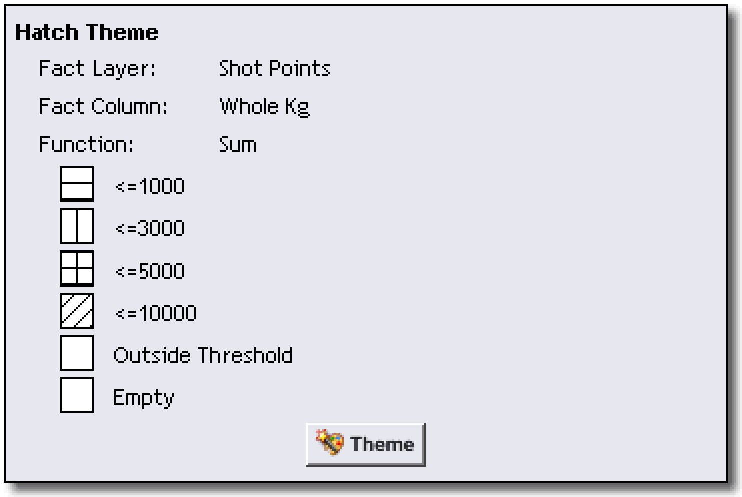
☐ ▤ <="1000"
☐ ▥ <="3000"
☐ ⊞ <="5000"
☐ ▨ <="10000"

Values Outside Threshhold: □

Empty: □

Figure 144. Theme Builder Wizard: Configure Tab (Numeric-Manual-Hatches).

15. Click the Save & Close. The *Theme Builder Wizard* will close. The theme will now be displayed in the **Theme Section** of the Area Group Layer configuration screen.



Hatch Theme

Fact Layer: Shot Points

Fact Column: Whole Kg

Function: Sum

▤ <=1000

▥ <=3000

⊞ <=5000

▨ <=10000

□ Outside Threshold

□ Empty

Figure 145. Hatch Theme Section (Numeric-Manual-Hatch).

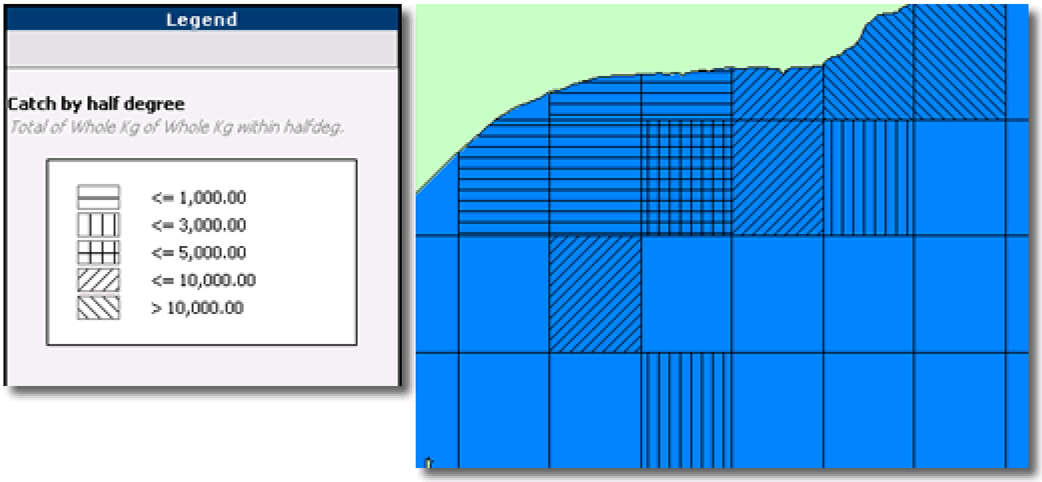


Figure 146. Area Group Layer Map View and Legend showing Manual Hatch Theme.

UNSHADED AND TRANSPARENT COLORS

The *Theme Builder Wizard* color picker includes the option to select an 'unshaded color' or ‘transparent color’.

For an *Area Group layer,* selecting either the 'unshaded color' or ‘transparent color’ makes the regions on the map transparent so that the underlying areas can still be seen.

STRING AGGREGATION

Map Intelligence allows the application of function on string values from a specified fact column. String aggregations require the specification of a color/hatch condition for a specific value instead of a threshold. The string functions available are:

- **Most Common** – this function applies the condition if the nominated value is the most common value in the region.
- **Uniform** – this function applies the condition if the nominated value is the only value from the specified column in the region.
- **Majority** – this function applies the condition if the nominated value makes up more than half of the values in the region.

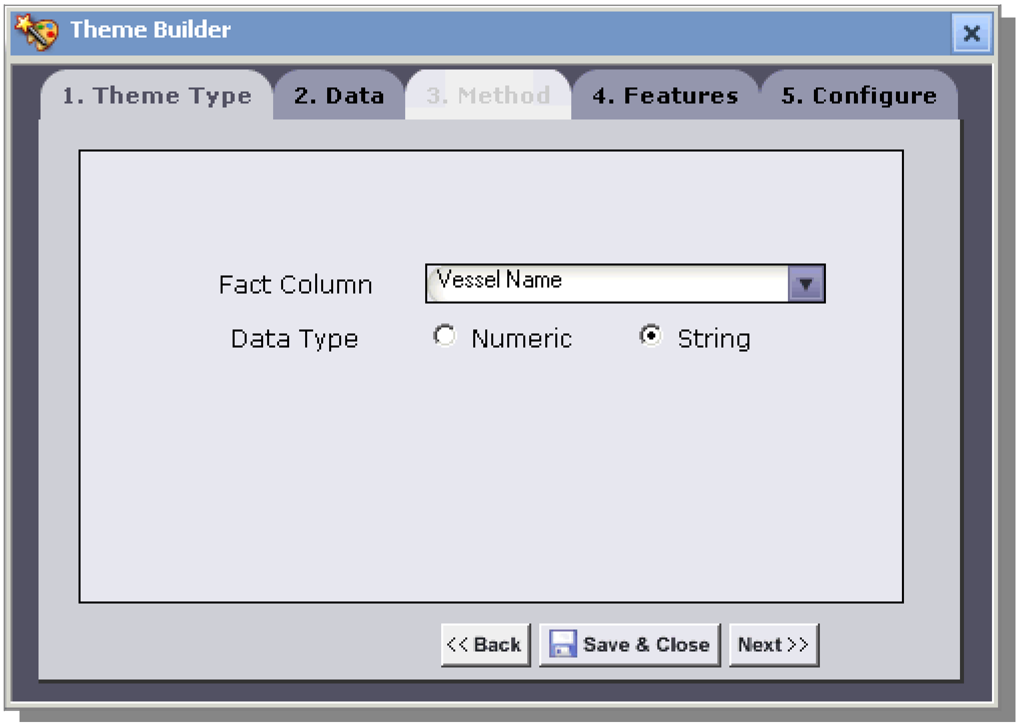
➢ ***Creating a themes based on a String Aggregation***

1. Click Theme. The *Theme Builder Wizard* displays with the **Theme Type** tab open by default.

2. The **Fact Column** drop down list displays the previously selected column on the *Area Group Layer* configuration screen. *To change the column*, select the another column from the **Fact Column** drop-down list.

Note Any changes to the Fact Column through the *Theme Builder Wizard* are reflected in the **Fact Column** field of the *Area Group Layer* configuration screen.

3. On the **Data Type** options, click the **Strings** radio button.



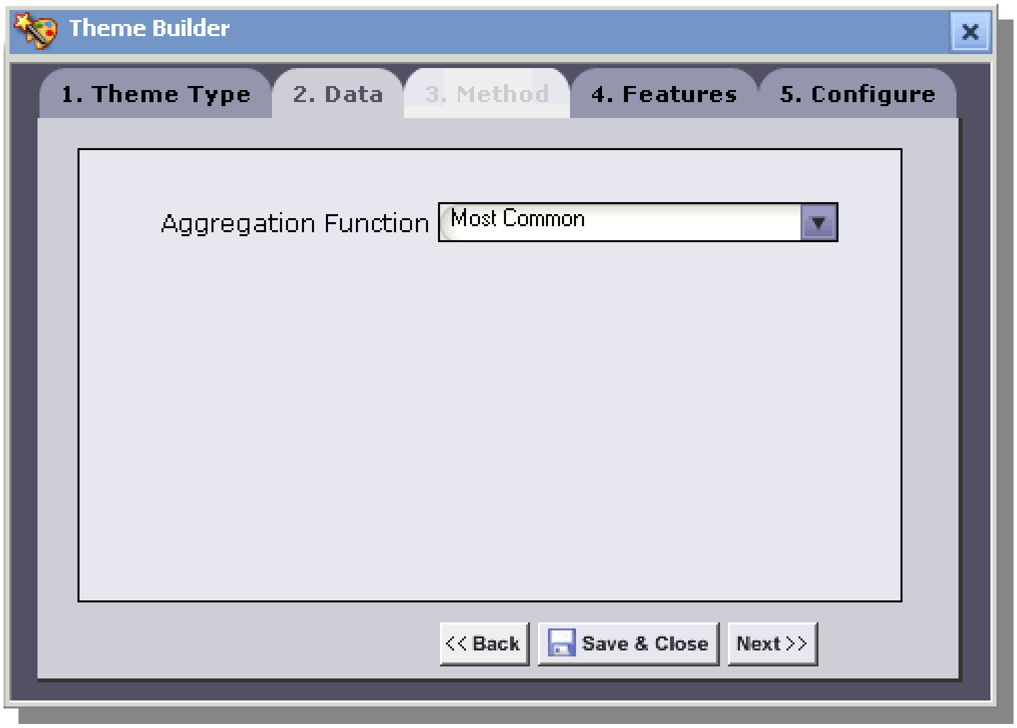
Fact Column: Vessel Name

Data Type: ○ Numeric ● String

Figure 147. Theme Builder Wizard: Theme Type Tab (String).

4. Click the **Data** tab or the **Next** button. The **Data** tab opens.

5. On the **Aggregation Function** drop-down list, select the function to use for the layer. The string functions available are: *Most Common*, *Uniform* and *Majority*.



Aggregation Function: Most Common

Figure 148. Theme Builder Wizard: Data Tab (String) with 'Most Common' selected.

6. Click the **Features** tab or the **Next** button.. The **Features** tab opens.

7. On the **Visual Feature** options, select the color mode.

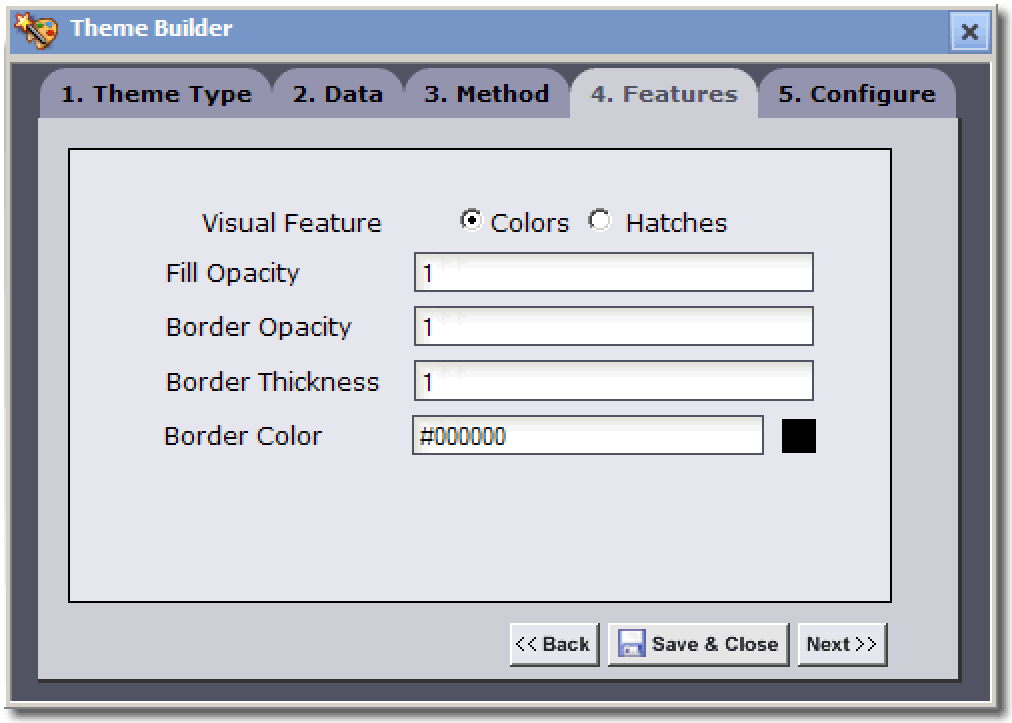
Note

There are two options for selecting the **Visual Feature:**

- **Colors**: use to specify a particular color.
- **Hatches**. use to specify a particular hatch.

SELECTING COLORS

1. On the **Visual Feature** options, click the **Colors** radio button.



Visual Feature ● Colors ○ Hatches

Fill Opacity 1

Border Opacity 1

Border Thickness 1

Border Color #000000 ■

Figure 149. Theme Builder Wizard: Features Tab (String – Colors).

Features Rendering Attributes

2. On the **Fill Opacity** field, enter a number from 0 to 1 to indicate the opacity of the colored regions in the layer.

3. On the **Border Opacity** field, enter a number from 0 to 1 to indicate the opacity of region borders in the layer.

4. On the **Border Thickness** field, enter a number from 0 to 1 to indicate the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.

5. On the **Border Color** field, enter a hexadecimal color value or select a color from the color picker for the region border color. The default color is black (#000000).

6. Click the **Configure** tab or the **Next** button. The **Configure** tab opens.

7. On the top drop-down list., select a value from the specified fact column.

Note

In some instances only a sub-set of values will be displays in the value list box. Click 🔄 to display all values. Be aware that large datasets may take sometime to process.

8. Click the rectangle next to the top drop-down list.

9. Select a color from the color picker to associate with the selected value. The selected value and associated color displays in the preview window list.

Tip

If the color picker does not have the preferred color, right-Click the colored rectangle and manually enter the hexadecimal color value, instead.

10. Configure any other values that you wish to associate with a color.

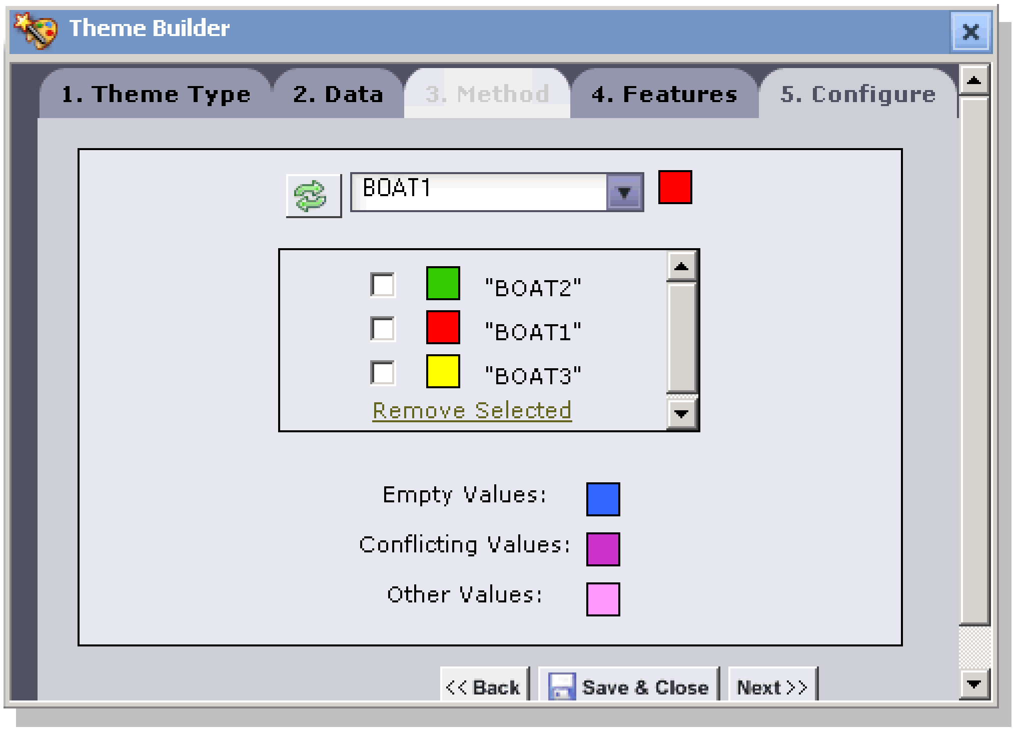
Note

Any values not assigned a specific color will be colored according to the color assigned to **Other Values** (see below).

11. Click the **Empty Values** rectangle and select a color from the color picker to represent any value-less region.

12. Click the **Conflict Values** rectangle and select a color from the color picker to represent any region that does not meet any specified condition, e.g. *a conflict condition will be returned if the 'Uniform' function has been set and there is more than one type of value present in the region.*

13. Click the **Other Values** rectangle and select a color from the color picker to represent any values that have not been assigned with a specific color.



BOAT1 🟥

☐ 🟩 "BOAT2"

☐ 🟥 "BOAT1"

☐ 🟨 "BOAT3"

Empty Values: 🟦

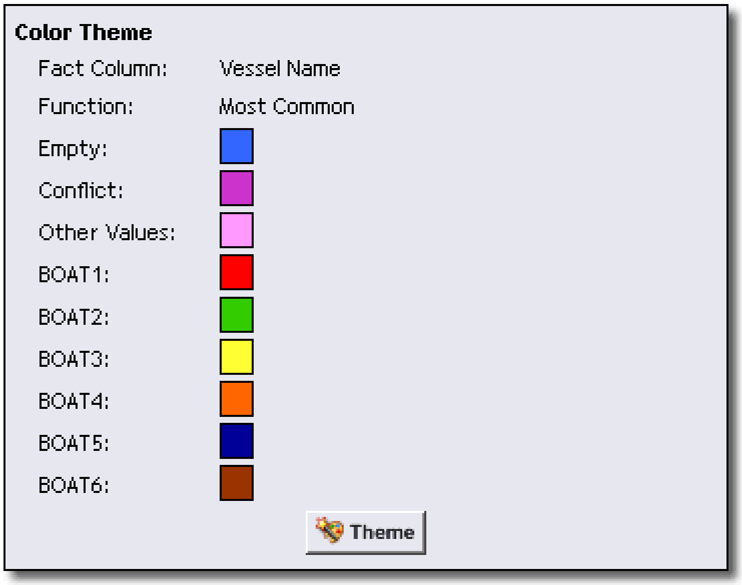
Conflicting Values: 🟪

Other Values: 🟪

Figure 150. Theme Builder Wizard: Configure Tab (String – Colors).

14. To delete values assigned to a specific color, in the Preview window list, click the check box next to the value and click **Remove Selected**.

15. Click Save & Close. The *Theme Builder Wizard* closes. The created theme displays in the Theme Section of the *Area Group Layer* configuration screen.



Color Theme

Fact Column: Vessel Name

Function: Most Common

Empty: 🟦

Conflict: 🟪

Other Values: 🟪

BOAT1: 🟥

BOAT2: 🟩

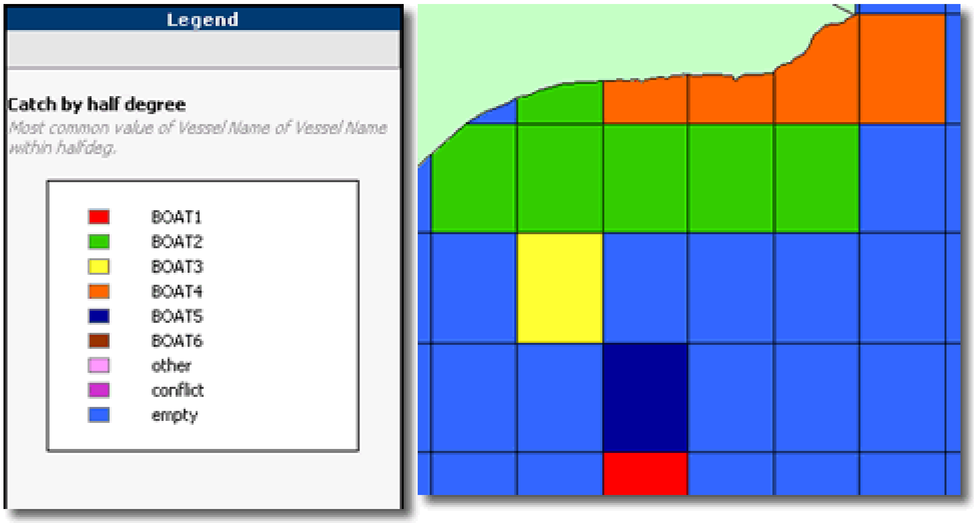
BOAT3: 🟨

BOAT4: 🟧

BOAT5: 🟦

BOAT6: 🟫

Figure 151. Color Theme (String – Colors).



Legend

Catch by half degree

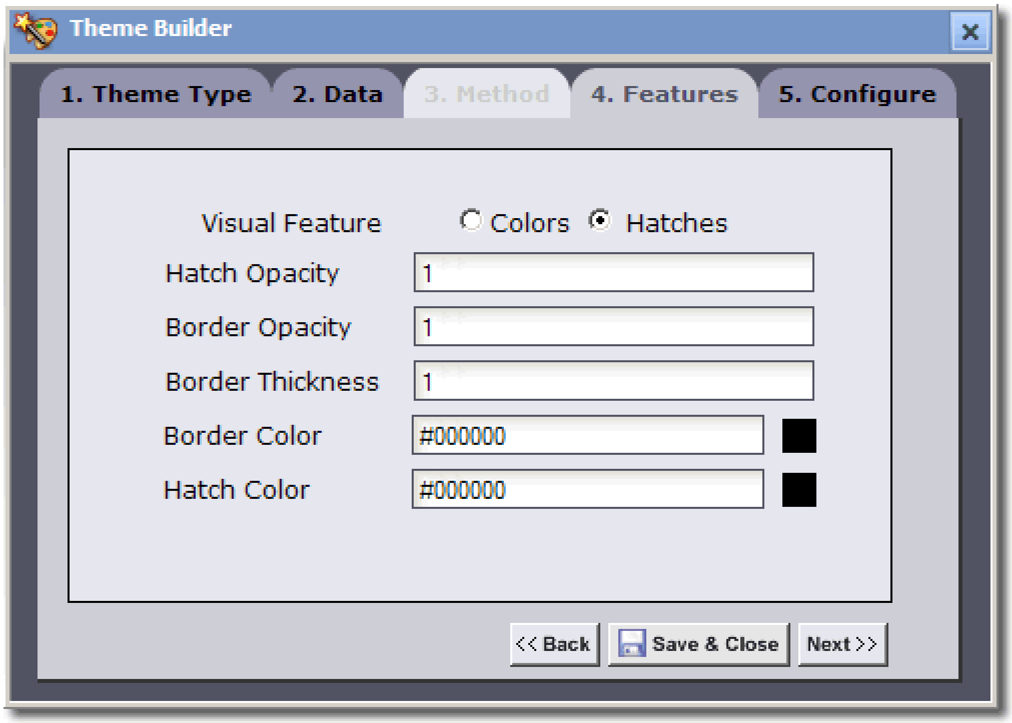
Most common value of Vessel Name of Vessel Name within halfdeg.

🟥 BOAT1
🟩 BOAT2
🟨 BOAT3
🟧 BOAT4
🟦 BOAT5
🟫 BOAT6
🟪 other
🟪 conflict
🟦 empty

Figure 152. Area Group Layer Map View and Legend showing Color Theme (String – Colors).

SELECTING HATCHES

1. Click the **Hatches** radio button.



Visual Feature ○ Colors ● Hatches

Hatch Opacity 1

Border Opacity 1

Border Thickness 1

Border Color #000000 ■

Hatch Color #000000 ■

Figure 153. Theme Builder Wizard: Features Tab (String – Hatches).

Features Rendering Attributes

2. On the **Hatch Opacity** field, enter a number from 0 to 1 to indicate the opacity of the hatches.

3. On the **Border Opacity** field, enter a number from 0 to 1 to indicate the opacity of region borders in the layer.

4. On the **Border Thickness** field, enter a number from 0 to 1 to indicate the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.

5. On the **Border Color** field, enter the hexadecimal color value or select a color from the color picker for the region border color. The default color is black (#000000).

6. On the **Hatch Color** field, enter a hexadecimal color value or select a color from the color picker for the hatch color. The default color is black (#000000).

7. Click the **Configure** tab or the **Next** button. The **Configure** tab opens.

8. On the top drop-down list, select a value from the specified fact column.

Note

In some instances only a sub-set of values displays in the value list box. Click to display all values. Be aware that large datasets may take sometime to process.

9. On the top drop-down list, select a value from the specified fact column.

10. Click the rectangle next to the drop-down list.

11. Select a hatch from the picker to associate with the selected value. The selected value and associated hatch displays in the preview window list.

12. Configure any other values that you wish to associate with a hatch.

Note Any values not assigned a specific hatch will be hatched according to the hatch assigned to **Other Values**. *See the following discussion.*

13. Click the **Empty Values** rectangle and select a hatch from the picker to represent any value-less region.

14. Click the **Conflict Values** rectangle and select a hatch from the picker to represent any region that does not meet any specified condition, e.g. *a conflict condition will be returned if the 'Uniform' function has been set and there is more than one type of value present in the region*.

15. Click the **Other Values** rectangle and select a hatch from the picker to represent any values that have not been assigned with a specific hatch

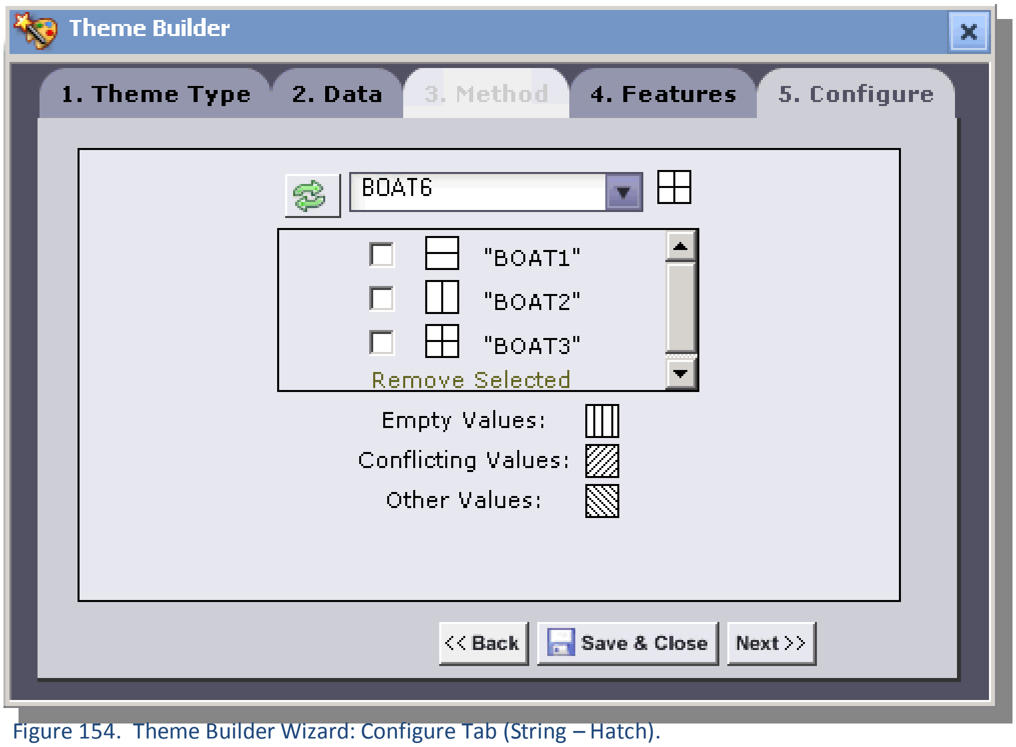
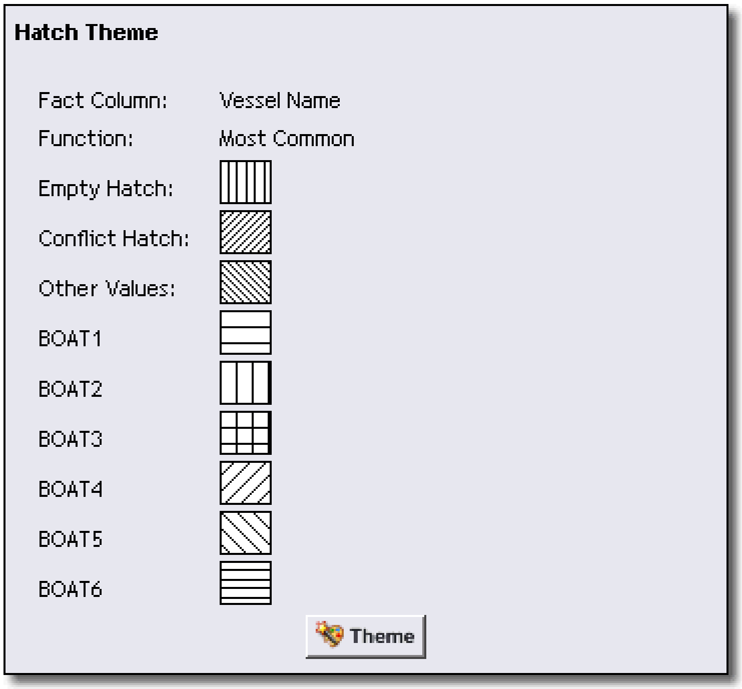


Figure 154. Theme Builder Wizard: Configure Tab (String – Hatch).

16. To delete values assigned to a specific hatch, in the Preview window list, click the check box next to the value and click **Remove Selected**.

17. Click Save & Close. The *Theme Builder* wizard closes. The created theme displays in the Theme Section of the *Area Group Layer* configuration screen.



Hatch Theme

Fact Column: Vessel Name

Function: Most Common

Empty Hatch: ▥

Conflict Hatch: ▨

Other Values: ▧

BOAT1 ▤

BOAT2 ▥

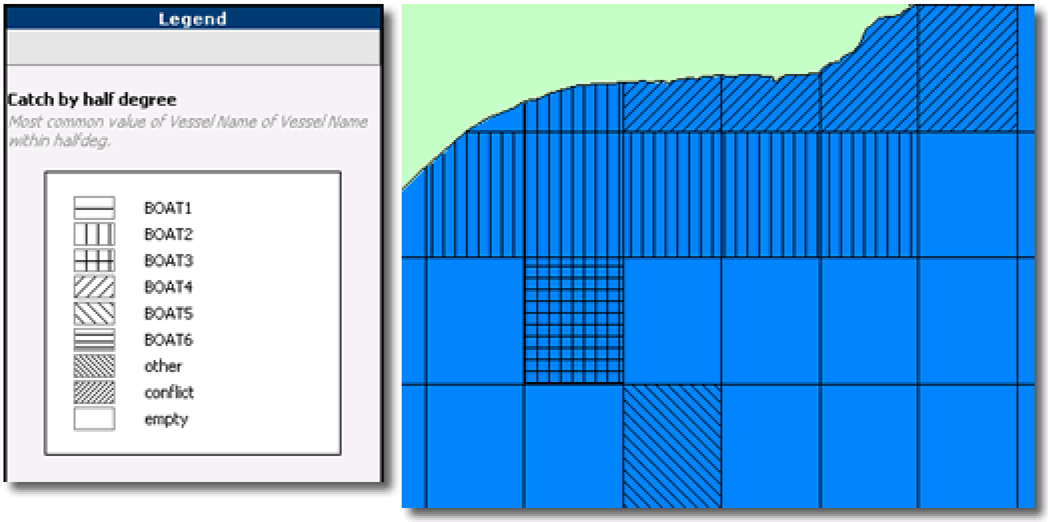
BOAT3 ▦

BOAT4 ▨

BOAT5 ▧

BOAT6 ▤

Figure 155. Hatch Theme (String – Hatch).



Legend

Catch by half degree

Most common value of Vessel Name of Vessel Name within halfdeg.

▤	BOAT1
▥	BOAT2
▦	BOAT3
▨	BOAT4
▧	BOAT5
▤	BOAT6
▧	other
▨	conflict
□	empty

Figure 156. Area Group Layer Map View and Legend showing Hatch Theme (String – Hatch).

This completes all the theme options for area group layers.

TO TEST YOUR SETTINGS

➢ *To test the Area Group Layer configuration*

1. On the Main Menu, click Test. A browser opens to display the layer configuration. Note that tested layers appear on the layer list in the Layer Directory.

SAVING THE LAYER

➢ *To save the Area Group Layer configuration*

1. On the Main Menu, click Save to save the layer settings. The layer appears n the Layer Directory.

Note Clicking the **Save** button saves all the changes made to all configuration screens.

EDITING A LAYER

➢ *To edit an Area Group Layer configuration*

1. On the Layer Directory, expand the **Area Group Layers** folder to view the layer list.

2. Click the **Area Group Layer** to edit. The layer configuration screen displays for editing.

3. On the Main Menu, click Save to save the layer settings.

Note Clicking the **Save** button saves all the changes made to all configuration screens.

COPYING A LAYER

➢ *To copy an Area Group Layer*

1. On the Layer Directory, expand the **Area Group Layers** folders to view the layer list.

2. Click the **Area Group Layer** to copy. The layer configuration screen displays.

3. On the Main Menu, click Copy. The copied layer configuration displays.

4. On the **Layer Name** field, type the title of the layer.

5. Click Save to save the layer settings. The new layer displays on the Layer Directory.

Note Clicking the **Save** button saves all the changes made to all configuration screens.

DELETING A LAYER

➢ ***To delete an Area Group Layer***

1. On the Layer Directory, expand the **Area Group Layers** folder to view the layer list.

2. Click the **Area Group Layer** to delete. The layer configuration screen displays.

3. On the Main Menu, click Delete.

4. Click Save to save the settings.

Note Clicking the **Save** button saves all the changes made to all configuration screens.

Note on Data Format

Map Intelligence, by default, places commas in numbers greater than 999. The format can be changed by specifying the column format in the universe. This only applies to columns with numeric values.

TROUBLESHOOTING

The following discussion presents the solutions to issues that may be encountered when using the *Map Intelligence Client for Reporting Services*.

CLIENT CONFIGURATION SERVER LOGIN ISSUES

Problem Description	*Solution/s*
“Invalid login/password/server combination.” When logging in to the *Client Configuration Server*, this message immediately displays even when the credentials entered are correct.	➢ Check if the *SQL Server* and *SQL Server Reporting Services* are already running.
The user is successfully logged in but there are no report items on the left panel of the *Client Configuration Server* even though there are existing reports in the server.	Check if the user (logged-in) is included in the security group/user of the *Reporting Services*. For Reporting Services 2005 and 2008, check through: **Home > Properties > Security.**

GLOBAL SETTINGS ISSUES

Problem Description	*Solution/s*
“Failed to read maps from server.” This message displays when retrieving available map from the *Map Intelligence Server*.	➢ Check if the server and port settings entered on the **Map Intelligence Server** field are correct. ➢ Check if the Map Intelligence Server (and included GIS servers) is already running.

LAYER ISSUES

Problem Description	*Solution/s*
“Failed to extract data from <DataSource name> data source. No data was returned.” This message displays when the “Multiple Shape/Image Icon ” theme type is selected.	➢ Check the **`reporting services-version`** property in the *client.properties* file. Refer to the *client.properties* section for more information. ➢ Check the permissions granted for the logged in user. Make sure that the user is included in the Reporting Services Security Group/User. For Reporting Services 2005, check through **Site Settings > Security > Configure Site-Wide Security** For Reporting Services 2008, check through **Site Settings > Security** ➢ If the query command type of the data source/data set is a stored procedure and it requires an input parameter/s, 1. define a default value for the parameter/s 2. set the **`get-default-value`** property in *client.properties* file to “true”. Refer to the *client.properties* section for more information. The server must be restarted to apply the changes in *client.properties*. ➢ If no data is returned even if the default values for the parameters are already configured and the **`get-default-value`** property is set to “true”, check if the report parameter property allows null value. The query could be returning a blank/null default value.
The Theme Builder data is insufficient/incomplete when the “Multiple Image/Shape Icon” theme type is selected.	➢ Check the **`test-max-rows`** and **the** **`max-rows`** properties in the *client.properties* file. These properties limit the 1. number of retrieved records to the *Reporting Services Server* and 2. number of data to be displayed in the Theme Builder respectively. Refer to the *client.properties* section for more information.

MAP RENDERING ISSUES

Problem Description	*Solution/s*
“Connection refused: connect.” This message displays on the Mapping Viewer.	Check if the Map Intelligence Server (and included GIS servers) is already running.
“Checksum failed” The map is not visible or there are no rendered points in the map. This message displays when the red exclamation point is clicked.	Check the permissions granted for the logged user. Make sure that the user is included in the Reporting Services Security Group/User. For Reporting Services 2005, check through **Site Settings > Security > Configure Site-Wide Security** For Reporting Services 2008, check through **Site Settings > Security** If during design time, *Reporting Services* did not return any data, check the **`test-max-rows`** and **the `max-rows`** properties in the *client.properties* file. These properties limit the 1. number of retrieved records to the Reporting Services *Server* and 2. number of data to be displayed in the Theme Builder respectively. Refer to the *client.properties* section for more information.
“Layer <layer name> had an invalid value <value> in column <column name>.”	The report field has an invalid data type (e.g. the field expecting a decimal value but it’s data type is an integer). Also, check the data type of the **Longitude** and **Latitude** fields of the report referenced by the map. These should not be an integer type. Valid data types are *Single*, *Double* or *Decimal*.
“Failed to generate a map: error loading data source: null” This message displays when rendering the map from the *Reporting Services server*.	The user credentials submitted to *Reporting Services* may not be authorized or was not configured properly. Check the **`SQLReportingUser, SQLReportingPassword and SQLReportingURL`** properties in the *client.properties* file Refer to the *client.properties* section for more information.

ADVANCE TOPICS

AUTO PILOT MODE

The Auto Pilot Mode (APM) controls some of the Map Intelligence Tools depending on the document being manipulated by the Client. For example, based on the name of a business intelligence document, a Layer Designer can control:

- what plugins must be excluded;
- what plugins must be deactivated, and
- what plugins must be activated and how.

An excluded plugin will not even appear in the list of plugins usually visible when the user clicks the **Tools** menu button in the Map Intelligence **Mapping Viewer**.

Auto Pilot mode requires some programming and access to the Map Intelligence server.

Further Information relating to Auto Pilot Mode can be found in the *Auto Pilot Mode in Map Intelligence* Technical Note.

INDEPENDENT MAPS AND LEGENDS

This section explains how to extract components of the Map Intelligence GUI and display them separately within an Map Intelligence Client for Reporting Services (MIRS) and retrieve printed images based on print templates.

MAPS

Independent maps can be retrieved as images and they are also implemented as tags that can be embedded in jsp's. They can also be invoked directly from an HTML request. Using the tag method, the map can be requested as an image only, or it can be interactive.

IMAGES

The following parameters are available:

Parameter Name	Value	Required
userid	The id of the user that defines the users session	Yes
W	Determines the width of the map in pixels.	No
H	Determines the width of the map in pixels.	No

Note

If the width and height are not specified then the size of the map will be the size from the current user session.

The client retrieves a legend by contacting the configuration server. The following url will retrieve a map:

```
http://[machine-name]:[port-number]/miclient/getMapImage
```

Example

To request a map with width 400 and height 400, the following url would be used:

```
<img src="http://[machine-name]:[port-
number]/miclient/getMapImage?userid=123456&w=400&h=400" alt="map">
```

where the machine-name and port-number are those of the configuration server

TAGS

The tag creates a map image based on the main map image but scaled to the required size (usually smaller). Attributes can be set for a border and an action to be applied when the image is clicked on. If no height is given then the scale is based on the width of the map image and vice versa, based on the aspect ration of the main map settings.

The following parameters are available:

Parameter Name	Value	Required
userid	The id of the user that defines the users session	Yes
map-image-width	The width in pixels of the map. NOTE that the width will be coerced to the aspect ratio of the main map if it turns out that the suggested width is greater than the width derived from the scaling of the main map maintaining its aspect ratio. The default value is the width of the main map.	No
map-image-height	The height in pixels of the map. NOTE that the height will be coerced to the aspect ratio of the main map if it turns out that the suggested height is greater than the height derived from the scaling of the main map maintaining its aspect ratio. The default value is the height of the main map.	No
map-image-not-clickable	Set to “true” if you do not want the map image to be interactive. The default value is “false”, i.e. interactive. As an interactive map it will use the last foreground tool selected, or the zoom to marquee navigation setting.	No
map-image-border	You can set a border around the map as a number of pixels. The default value is “0” or no border.	No

Here is an example in an iframe:

```
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=utf-8">
</head>
<body onload="javascript:document.forms0.submit(); document.forms1.submit(); return
true">
<iframe name="mapImage" width=400 height=300 frameborder=0></iframe>
<form action="http://localhost:11090/mapIntelligence/componentServlet" method="post"
target="mapImage">
<input type="hidden" name="frontendComponent" value="map-image-component"/>
<input name="userid" type="hidden" value="5294334027507255954526495945">
<input name="map-image-width" type="hidden" value="320">
<input name="map-image-height" type="hidden" value="240">
<input name="map-image-not-clickable" type="hidden" value="true">
<input name="map-image-border" type="hidden" value="2">
</form>
</body>
</html>
```

Note

Only the width or the height need be set but if both are set then the image is scaled based on a minimum of the scales resulting from the width and height to the original Map Intelligence viewer width and height. The aspect ratio of the original image is preserved.

LEGEND

Previously the image was a jsp that generated html to render the legend in the browser. It is now returned by a servlet as an image. The servlet is named /mapIntelligence/getLegendImage and has the following parameters available:

Parameter Name	Value	Required
userid	The id of the user that defines the users session	Yes
size	Determines the look and feel of the legend. If none is specified, the look and feel with an id of 1 is used. See Look and Feel below for more information.	No

The client retrieves a legend by contacting the configuration server. The following url will retrieve a legend:

```
http://[machine-name]:[pot-number]/miclient/getLegendImage
```

Example

To request a legend using the look and feel set of 2, the following url would be used:

```
<img src="http://[machine-name]:[port-
number]/miclient/getLegendImage?userid=123456&size=2" alt="legend">
```

where the machine-name and port-number are those of the configuration server.

LOOK AND FEEL

To obtain the desired look and feel of the independent legend refer to the *Technical Note: Legend Customization.*

PRINTED IMAGES

The results of printing with a print template can be returned as an image. For details on what print templates are and creating them, see the technical note on *Creating a Print Template*.

The following parameters are available:

Parameter Name	Value	Required
userid	The id of the user that defines the users session	Yes
template	The name of the print template to use.	No
p_	Custom parameters defined in the template can be passed by prefixing their parameter names with _p	No

The client retrieves a print template image by contacting the configuration server. The following url will retrieve a legend:

```
http://[machine-name]:[pot-number]/miclient/getPrintTemplate
```

Example

To request the default print template image and pass the custom parameters w and h, the following url would be used:

```
<img src="http://[machine-name]:[port-
number]/miclient/getPrintTemplate?userid=123456&template=default&p_w=400&p_h=400"
alt="legend">
```

where the machine-name and port-number are those of the configuration server

APPENDIX A: CLIENT METHODS

There are two methods available for sending requests from the Business Intelligence application. They are determined by the property <code>use-splash-screen<code> in the client.properties file (<install-dir>\tomcat\webapps\miclient\WEB-INF\properties\client). By default, the value is set to false. The implications of choosing a particular method are described below.

use-splash-screen = true

The request is sent as described by the following diagram. While the route taken is less efficient, the Javascript security issues are eliminated. A splash screen is displayed when the map is being retrieved.

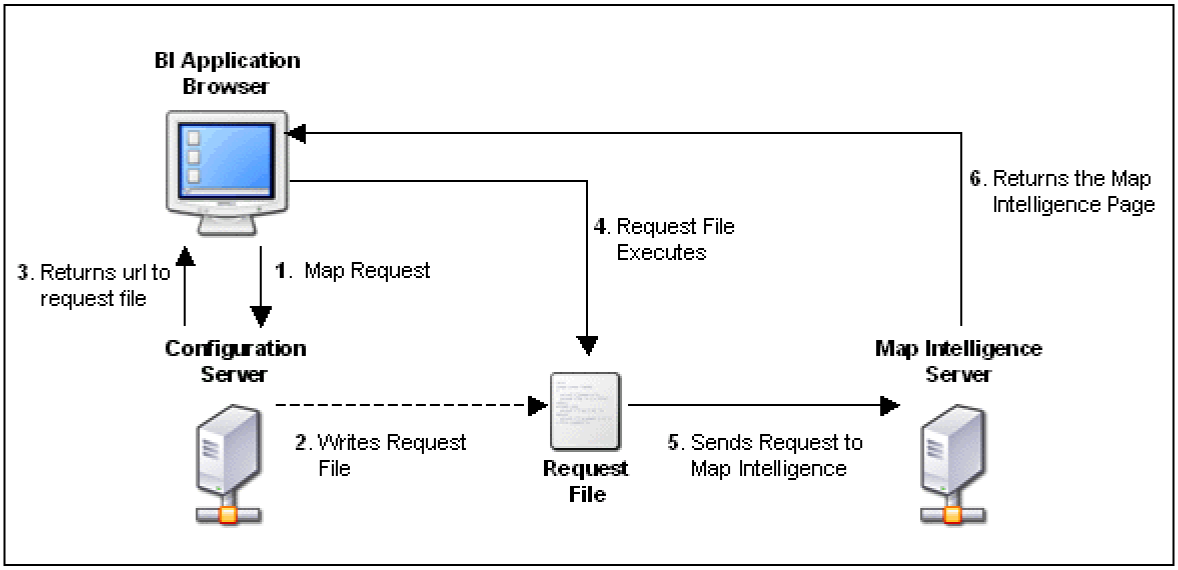
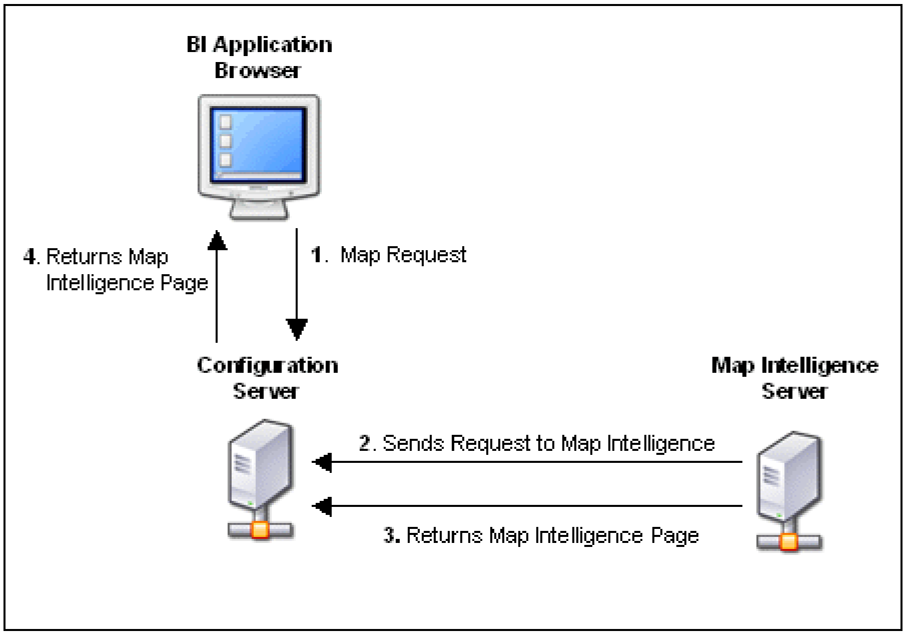


Figure 157. Method 1: With Splash Screen.

use-splash-screen = false

The request is sent as described by the following diagram. This is the most efficient route for the request to take. Some browsers however, have been known to have security issues with Javascript when using this method. Also, as the property name implies, a splash screen is not displayed when waiting for a map.



BI Application Browser
4. Returns Map Intelligence Page
1. Map Request
Configuration Server
Map Intelligence Server
2. Sends Request to Map Intelligence
3. Returns Map Intelligence Page

Figure 158. Method 2: No Splash Screen.

OPACITY OF COLORED CIRCULAR REGIONS IN RADIUS LAYERS

A number from 0 to 1 that indicates the opacity of all colored circular regions in radius relationship layers.

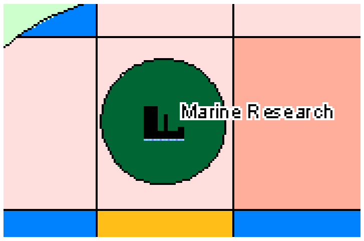


Figure 159. Opacity set to 1

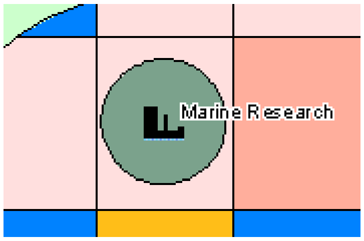


Figure 160. Opacity set to 0.5

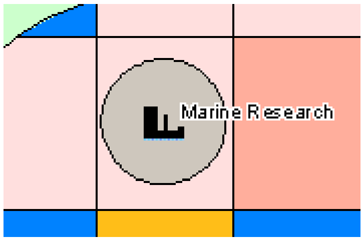


Figure 161.Opacity set to 0.2

OPACITY OF COLORED REGIONS

A number from 0 to 1 that indicates the opacity of all colored region layers.

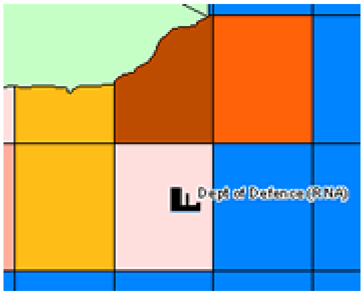


Figure 162. Opacity set to 1

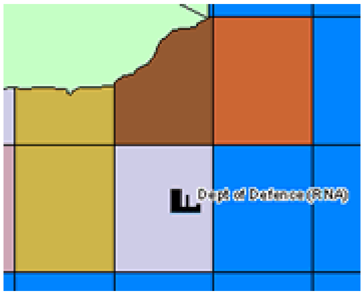


Figure 163. Opacity set to 0.8

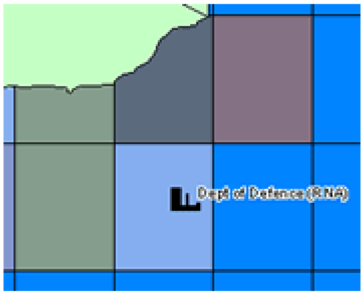


Figure 164.Opacity set to 0.5

OPACITY OF HATCHES ON LAYERS

A number from 0 to 1 that indicates the opacity of all hatched layers.

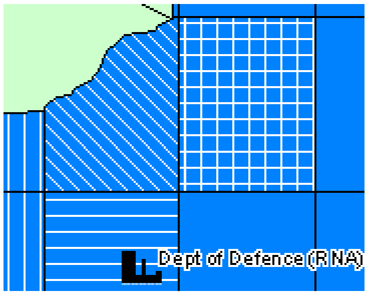


Figure 165. Opacity set to 1

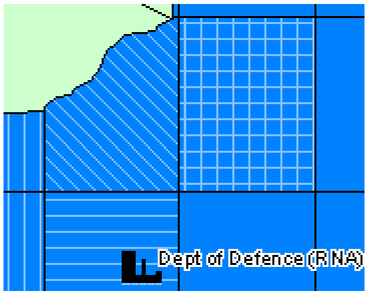


Figure 166. Opacity set to 0.8

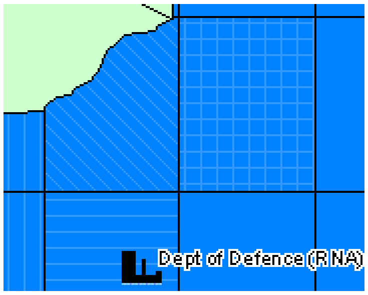


Figure 167.Opacity set to 0.5

COLOR OF HATCHES ON LAYERS

The RGB setting for the hatch color has a six hexadecimal digit (3 byte) number representing Red, Green and Blue. The default value is Black (000000).

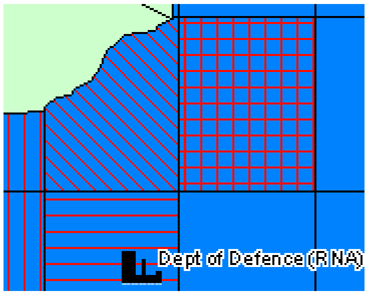


Figure 168. hatch color set to Red (FF0000)

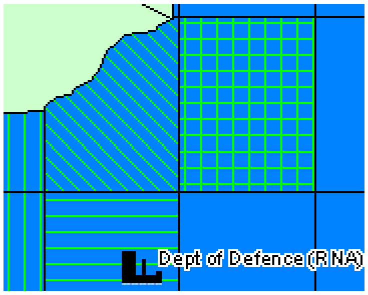


Figure 169. Hatch color set to Green (00FF00)

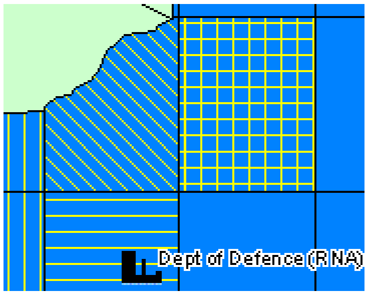


Figure 170. Hatch color set to Yellow (FFFF00)

OPACITY OF CIRCULAR REGION BORDERS IN RADIUS RELATIONSHIP LAYER

A number from 0 to 1 that indicates the opacity of all the circular region borders in a radius relationship layer.

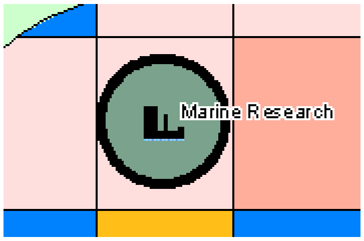


Figure 171. Border opacity set to 1

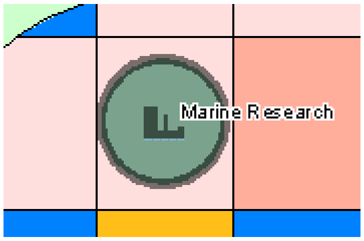


Figure 172. Border thickness set to 0.5

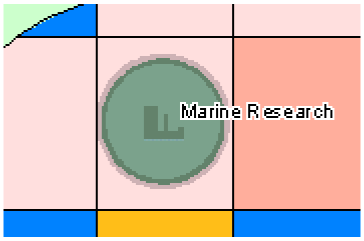


Figure 173. Border thickness set to 0.2

COLOR OF CIRCULAR REGION BORDERS IN RADIUS RELATIONSHIP LAYER

The RGB setting for the border color as a six hexadecimal digit (3 byte) number representing Red, Green and Blue. The default value is Black (000000).

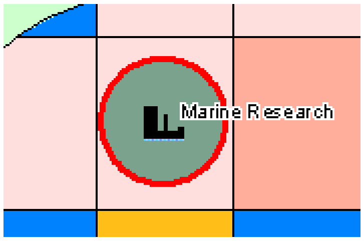


Figure 174. Border color set to Red (FF0000)

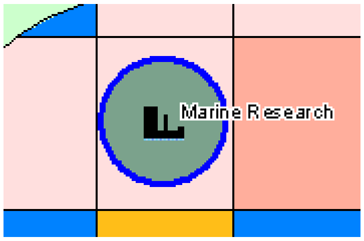


Figure 175. Border color set to Blue (0000FF)

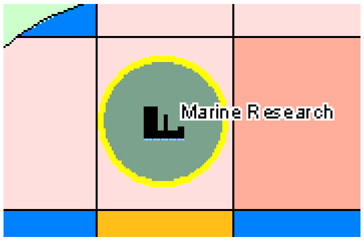


Figure 176. Border color set to Yellow (FFFF00)

THICKNESS OF CIRCULAR REGION BORDERS IN RADIUS RELATIONSHIP LAYER

The thickness in points or pixels (depending on the GIS provider) of the circular region borders as a positive integer.

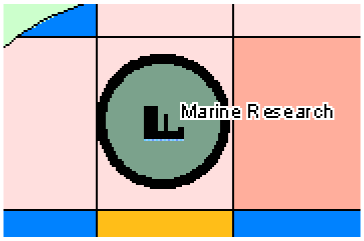


Figure 177. Border thickness set to 5

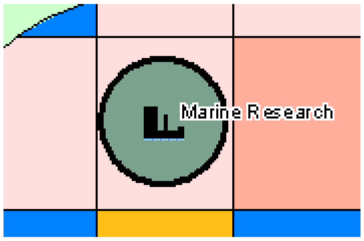


Figure 178. Border thickness set to 3

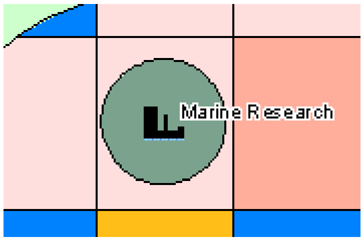


Figure20179. Border thickness set to 1

USE MAP BORDER ATTRIBUTES

If Yes (the default) then, the map's attributes are used, otherwise the following settings are used.

OPACITY OF REGION BORDERS

A number from 0 to 1 that indicates the opacity of all region borders.

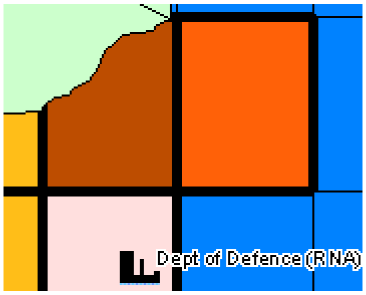


Figure 201. Border opacity set to 1

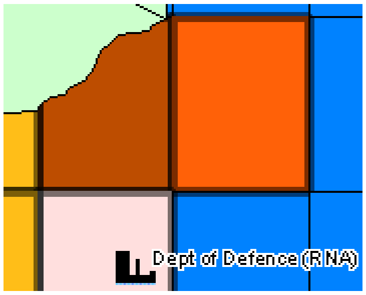


Figure 180. Border opacity set to 0.5

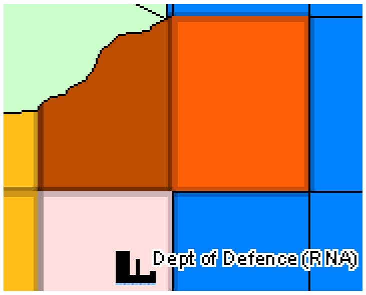


Figure 181. Border opacity set to 0.2

COLOR OF REGION BORDERS

The RGB setting for the border color as a six hexadecimal digit (3 byte) number representing Red, Green and Blue. The default value is Black (000000).

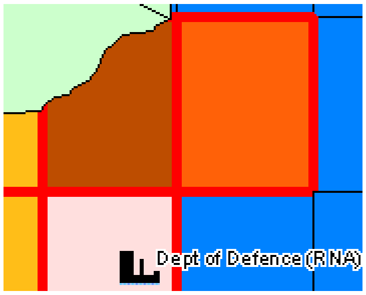


Figure 182. Border color set to Red (FF0000)

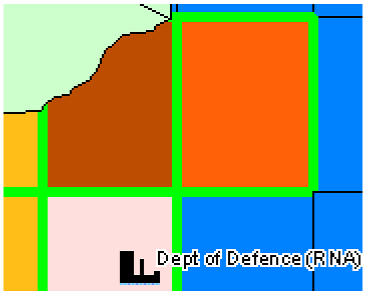


Figure 183. Border color set to Green (00FF00)

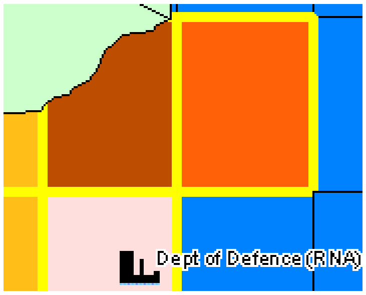


Figure 184. Border color set to Yellow (FFFF00)

REPORT CUSTOM CODE

```
Public Const PARAM_DELIMITER As String = "~"
Public Const SERVER As String = "http://192.168.3.31:"
Public Const PORT_NUMBER As String = "39091"
Public Const MI_CLIENT_PATH As String = "/miclient/renderMap?documentId="


Private Function CreateMapIntelligenceURL(ByVal formattedParameters As String) As String
    Dim connToken As String = String.Empty
    Dim reportFolder As String = String.Empty
    Dim reportName As String = String.Empty
    Dim temp As String = String.Empty
    Dim sb As New System.Text.StringBuilder()
    Try
        connToken = String.Format("%26connToken={0}{1}",reportName, Report.User!UserID)
        reportFolder = Report.Globals!ReportFolder
        reportName = Report.Globals!ReportName
        temp = String.Format("{0}/{1}{2}", reportFolder, reportName, formattedParameters+connToken)
        sb.Append("javascript:void(window.open('")
        sb.Append(SERVER)
        sb.Append(PORT_NUMBER)
        sb.Append(MI_CLIENT_PATH
        ) sb.Append(temp)
        sb.Append("','Integeo','RSINTEGEOMAP','_blank'))")
        Return sb.ToString()
    Catch ex As Exception
        Return GetExceptionMessage(ex)
    End Try
End Function

Private Function GetExceptionMessage(ByVal thrownException As Exception) As String
    Dim message As String = String.Empty
    message = String.Format("Error: {0}", thrownException.Message)
    Return message
End Function

Public Function GetMapIntelligenceURL(ByVal reportParameters As String) As String
    Dim formattedParameters As String = String.Empty
    Dim parameterCollection() As String
    Try
        parameterCollection = reportParameters.Split(",")
        If Not reportParameters = String.Empty Then
            formattedParameters = GetFormattedParameters(parameterCollection)
        End If
        Return CreateMapIntelligenceURL(formattedParameters)
    Catch ex As Exception
```

```
            Return GetExceptionMessage(ex)
        End Try
    End Function

    Private Function GetFormattedParameters(ByVal parameterCollection() As String) As String
        Dim temp As String = String.Empty
        Dim sb As New System.Text.StringBuilder()
        Try
            For Each reportParameter As String In parameterCollection
                If Report.Parameters(reportParameter).IsMultiValue Then
                    temp = Join(Report.Parameters(reportParameter).Value, ",")
                    sb.Append(String.Format("%26{0}={1}", reportParameter, temp.Replace(",", PARAM_DELIMITER)))
                Else
                    sb.Append(String.Format("%26{0}={1}", reportParameter, Report.Parameters(reportParameter).Value))
                End If
            Next
            Return sb.ToString()
        Catch ex As Exception
            Return GetExceptionMessage(ex)
        End Try
    End Function
```

REPORT OBJECT

```
using System;
using System.Data;
using System.Configuration;
using System.IO;
using System.Text;
using System.Web;
using System.Web.Security;
using System.Web.UI;
using System.Web.UI.WebControls;
using System.Web.UI.WebControls.WebParts;
using System.Web.UI.HtmlControls;
using Microsoft.Reporting.WebForms;
using System.Web.Services.Protocols;

/// <summary>
/// Summary description for ReportingObject
/// </summary>
public class ReportingObject
{
        public ReportingObject()
        {

        }

    /// <summary>
    /// This Method is used for rendering a report.
    /// </summary>
    /// <param name="reportViewer"></param>
    /// <param name="param"></param>
    public static void RenderReport(ReportViewer reportViewer,ReportParameter[] param)
    {
        string url = ConfigurationManager.AppSettings["REPORT_SERVER"];
        Uri reportServerURL = new Uri(url);
        try
        {
            reportViewer.ShowCredentialPrompts = true;
            reportViewer.ServerReport.ReportServerCredentials = new ReportCredentials("Username", "Password", "Domain");
            reportViewer.ProcessingMode = ProcessingMode.Remote;
            reportViewer.ServerReport.ReportServerUrl = reportServerURL;
            reportViewer.ServerReport.SetParameters(param);
            reportViewer.ServerReport.Refresh();
        }
        catch (ReportViewerException ex)
        {
            throw ex;
        }
    }


    /// <summary>
    /// This method is used for creating the url string of the configured map.
    /// </summary>
    /// <param name="reportViewer"></param>
    /// <param name="userID"></param>
    /// <returns>String</returns>
    public static string GetMapURL(ReportViewer reportViewer,string userID)
    {
        string MI_SERVER = ConfigurationManager.AppSettings["MI_SERVER"];
        string MI_CLIENT = ConfigurationManager.AppSettings["MI_CLIENT"];
        string PORT_NUMBER = ConfigurationManager.AppSettings["PORT_NUMBER"];
        string PARAM_DELIMITER = ConfigurationManager.AppSettings["PARAM_DELIMITER"];

        string reportName = string.Empty;
        string reportPath = string.Empty;
        string temp = string.Empty;
        string url = string.Empty;
        string connToken = string.Empty;

        StringBuilder sb = new StringBuilder();
        ReportParameterInfoCollection parameterCollection = reportViewer.ServerReport.GetParameters();

        reportPath = reportViewer.ServerReport.ReportPath;
        reportName = reportViewer.ServerReport.DisplayName;

        //connToken = string.Format("&connToken={0}{1}", reportID, userID.Replace("\\", ""));
        connToken = string.Format("&connToken={0}{1}", reportName, userID.Replace("\\", ""));
```

```
        sb.Append(MI_SERVER);
        sb.Append(PORT_NUMBER)
        ;
        sb.Append(MI_CLIENT);
        sb.Append(reportPath);

        foreach (ReportParameterInfo info in parameterCollection)
        {
            foreach (string value in info.Values)
            {
                if (info.Values.Count > 1)
                {
                    temp += string.Format("{0}{1}", value, PARAM_DELIMITER);
                }
                else
                {
                    temp = value;
                }
            }

            sb.Append(string.Format("&{0}={1}",info.Name,temp));


        }

       url = sb.ToString();
        url += connToken;

        return url;

    }

}
```

REPORT CREDENTIALS

```
using System;
using System.Data;
using System.Configuration;
using System.Web;
using System.Web.Security;
using System.Web.UI;
using System.Web.UI.WebControls;
using System.Web.UI.WebControls.WebParts;
using System.Web.UI.HtmlControls;

/// <summary>
/// Summary description for ReportCredentials
/// </summary>
public class ReportCredentials : Microsoft.Reporting.WebForms.IReportServerCredentials
```

```
{
    string _userName, _password, _domain;

    public ReportCredentials(string userName, string password, string domain)
    {

        _userName = userName;

        _password = password;

        _domain = domain;

    }

    public System.Security.Principal.WindowsIdentity ImpersonationUser
    {

        get
        {

            return null;

        }

    }

    public System.Net.ICredentials NetworkCredentials
    {

        get
        {

            return new System.Net.NetworkCredential(_userName, _password, _domain);

        }

    }

    public bool GetFormsCredentials(out System.Net.Cookie authCoki, out string userName, out string password, out string authority)
    {
        userName = _userName;
        password = _password;
        authority = _domain;
        authCoki   =   new   System.Net.Cookie(".ASPXAUTH",   ".ASPXAUTH",   "/",
        "Domain");

        return true;
    }
}
```

GLOSSARY

Area Group Layer

Area Group layers correspond to existing areas on a map. The displayed theme is based on data attribute values, no spatial calculation is required. Instead, a column in your business data is designated to have values that match a column in the map data. For example, an existing map layer of suburbs may correspond to a data column for suburbs where the values are the suburb names. Then, for transaction data that represents customer complaints and that also contains a suburb column, it is possible to make a cross-reference between the transaction and the map area using the suburb name. An example that would use this correlation is displaying a theme on a suburb's area on the map that reflects the most common complaint type received from that suburb.

Built-in Layer

A built-in layer is defined by the map on the mapping server rather than the Map Intelligence Client. These layers may contain all types of feature such as lines, points and regions e.g. cities, rivers and parks.

Coordinate Systems

A coordinate system provides a frame of reference for measuring locations on the surface of the earth. A full list of acceptable coordinate systems is available in the *Coordinate Systems* document.

Data Columns

Data Columns are columns in a report that are sent to the Map Intelligence Server and have their values available in the Mapping Viewer. Data column values are displayed in the map data screen and popups that appear when you move your mouse over a point in the map. Data columns can also be used as fact or theme columns.

Fact Columns

A fact column is a data column that can have a string or numeric aggregation applied to it by a Relationship layer.

Hatching

Hatching is overlaying a pattern on top of a polygon allowing it to be distinguished visually rather than by using color.

Image Icons

Icons are used to visually represent points on a map. Icons can be symbols (image files) selected by the user or colored shapes.

Layers

A layer is a set of spatial features displayed on a map. Objects in a layer are usually grouped logically e.g. capital cities or parks. Each feature in a layer has the same set of data attributes, so a layer is in many ways like a relation (table) in a relational database.

Map Intelligence Layer

A Map Intelligence Layer is a layer defined in the Map Intelligence Client. These layers display data in a report geographic features on a map.

Map Intelligence Server

The Map Intelligence Server is the engine that takes requests from the Map Intelligence Client and Mapping Viewer and responds by displaying maps and associated information.

Mapping Viewer

The Mapping Viewer displays the layers configured by the Layer Designer on the specified map. The Mapping Viewer is viewed in a browser and provides controls that allow the end user to manipulate the map to return the desired analysis.

Point

A point is a geographic feature with a single pair of coordinates. These are used to represent objects or events e.g. house or accident locations.

Point Layer

Point layers are map layers where data is represented on the map as discrete point images or symbols. For example: a particular layer might represent the location of stores as push-pin icons and another layer could represent accidents as colored dots, where the color (theme) represents the severity of the accident. Typically, the rows in a table of data belong to a business concept such as people or address details, where each column is an attribute of that concept. Thus each row in your business data can be represented as an individual point in a point layer. In Map Intelligence, point layers form the foundation for relationship layers.

Radius Relationship Layer

Radius relationship layers are circular regions with themes around certain points of interest that show information about other points that fall within that circular region. These layers are generated by Map Intelligence. They are based on calculations made by Map Intelligence on the specified data values as specified by the layer designer. For example: different colored circles indicate the average house price within half a kilometer of a proposed waste plant. Another example is where different colored circles indicate the number of burglaries that have occurred within a five-mile distance of houses belonging to known burglars. In the current version of Map Intelligence, the circle center points (eg: houses belonging to known burglars) and the data being analyzed (burglaries), must be point layers.

Regional Relationship Layer

A Region Relationship layer corresponds to a map area of any shape that is solely geographical in its definition and not generated by Map Intelligence. Examples would be suburbs, zip codes, local government areas or police precincts. Region Relationship layers can be given themes according to specified data rules associated with the points that fall within that region. An example of such a theme could be color-coding precincts according to the number of crimes that have taken place within their boundaries, or applying different hatches to suburbs based on the total value of house sales that have occurred in each one. Map Intelligence works out in which region a point (eg: a sale or accident) physically belongs by doing a spatial calculation.

Relationship Layer

For further information see: Radius Relationship Layers and Regional Relationship Layers

Theme

A theme can be described as a representation of map features according to different associated values.

INDEX